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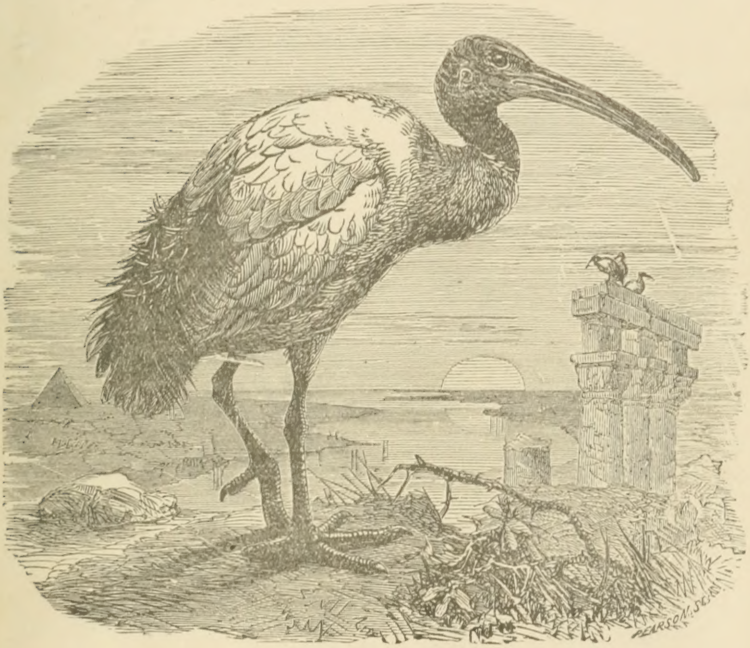

VOL. III. 1915.

TENTH SERIES.

Delectasti me, Domine, in operibus manuum tuarum.

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TENTH SERIES.

VOLUME III.

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,, 2. ,, April 8th.
,, 3. ,, July 2nd.
,, 4. ,, October 8th.

LIST OF THE MEMBERS
OF THE
BRITISH ORNITHOLOGISTS' UNION.
1915.

[An asterisk indicates an Original Member. It is particularly requested that Members should give notice to the Secretary of the Union of any error in their addresses or descriptions in this List, in order that it may be corrected.]

Date of Election.

1914. Aldworth, Capt. Thomas Preston.

1911. Alexander, Christopher James; International Institute of Agriculture, Rome, Italy.

1911. Alexander, Horace Gundry; 3 Mayfield Road, Tunbridge Wells, Kent.

1888. Aplin, Oliver Vernon; Stonehill House, Bloxham, Oxon.

5 1896. Archibald, Charles F.; 2 Darnley Road, West Park, Leeds, Yorks.

1896. Arrigoni degli Oddi, Count Ettore, Professor of Zoology, University, Padua; and Ca' oddo, Monselice, Padua, Italy.

1901. Arundel, Major Walter B., F.Z.S.; High Ackworth, Pontefract, Yorks.

1915. Ashby, Edwin; Wittunga, Blackwood, Adelaide, S. Australia.

1901. Ashby, Herbert; Broadway House, Brookvale Road, Southampton.

10 1908. Ashworth, John Wallwork, M.R.C.S., L.R.C.P., F.R.G.S., F.G.S.; Thorne Bank, Heaton Moor, near Stockport, Cheshire.

1897. Astley, Hubert Delaval, M.A., F.Z.S.; Brinsop Court, Hereford.

1885. Backhouse, James, F.Z.S.; The Old Manor House, Knaresborough, Yorks.

1904. Bahr, Philip Heinrich, M.A., M.B., M.R.C.S., L.R.C.P., F.Z.S.; 12 Vicarage Gardens, Kensington, W.

1901. Bailward, Col. Arthur Churchill, F.Z.S. (R.F.A.); 64 Victoria Street, S.W.

Date of Election.

15 1892. Baker, E. C. Stuart, F.Z.S.; 6 Harold Road, Upper Norwood, S.E. (*Hon. Secretary and Treasurer.*)

1901. Baker, John C., M.B., B.A.; Ceely House, Aylesbury, Bucks.

1889. Balston, Richard James, F.Z.S.; Springfield, Maidstone, Kent.

1906. Bannerman, David A., B.A., F.R.G.S.; 11 Washington House, Basil Street, S.W.

1890. Barclay, Francis Hubert, F.Z.S.; The Warren, Cromer, Norfolk.

20 1885. Barclay, Hugh Gurney, F.Z.S.; Colney Hall, Norwich, Norfolk.

1903. Bartels, Max.; Pasir Datar, Halte Tjisaät (Preanger), Java, Dutch East Indies.

1906. Bates, George L., C.M.Z.S.; Bitye, Ebolowa, Kamerun, West Africa.

1912. Baxendale, Francis Richard Salisbury; Commissioner of Famagusta, Cyprus.

1913. Baynes, George Kenneth; 120 Warwick Street, S.W.

25 1912. Beebe, C. William, C.M.Z.S.; Curator of Birds, New York Zoological Park, New York, U.S.A.

1910. Beeston, Harry; Sunnymead, South Street, Havant, Hants.

1897. Benson, John.

1897. Berry, William, B.A., LL.B.; Tayfield, Newport, Fifeshire.

1914. Betham, Col. Robert M.; c/o Messrs. Grindlay & Co., Hornby Road, Bombay, India.

30 1907. Bethell, The Hon. Richard, F.Z.S.; 30 Hill Street, Mayfair, W.

1907. Bickerton, William, F.Z.S.; The Firs, Farraline Road, Watford, Herts.

1880. Bidwell, Edward; 1 Trig Lane, Upper Thames Street, E.C.

1892. Bird, The Rev. Maurice C. H., M.A.; Brunstead Rectory, Stalham, S.O., Norfolk.

1891. Blaauw, Frans Ernst, C.M.Z.S.; Gooilust, 'sGraveland, Hilversum, Noord-Holland.

35 1913. Blackwood, George Glendinning; c/o W. T. Blackwood, Esq., Messrs. Blackwood & Smith, Peebles.

1912. Blaine, Gilbert, F.Z.S.; 5 a The Albany, Piccadilly, W.

1903. Blathwayt, The Rev. Francis Linley, M.A.; Doddington Rectory, Lincoln.

1914. Blyth, Robert Oswald, M.A.; Haslemere, Stanmore, Middlesex.

Date of Election.

1897. Bonar, The Rev. Horatius Ninian, F.Z.S.; 16 Cumin Place, Edinburgh.

40 1905. Bone, Henry Peters; 28 Adelaide Crescent, Brighton.

1894. Bonhote, John Lewis, M.A., F.L.S., F.Z.S.; Zoological Gardens, Giza, Egypt; and Gade Spring Lodge, Hemel Hempstead, Herts.

1906. Boorman, Staines; Heath Farm, Send, Woking, Surrey.

1898. Booth, George Albert; Whalley Range, Longton, Lancs.

1904. Booth, Harry B.; Rybill, Ben Rhydding, *viâ* Leeds, Yorks.

45 1908. Borrer, Clifford Dalison; 20 Pelham Crescent, South Kensington, S.W.

1915. Bradford, Arthur Danby; Upton Lodge, Watford, Herts.

1895. Bradford, Sir John Rose, K.C.M.G., M.D., D.Sc., F.R.S., F.Z.S; 8 Manchester Square, W.

1902. Bridgeman, Commdr. The Hon. Richard O. B., R.N.; c/o Commander-in-Chief, Cape of Good Hope Station, c/o G.P.O.

1909. Briggs, Thomas Henry, M.A., F.E.S.; Rock House, Lynmouth, R.S.O., N. Devon.

50 1902. Bristowe, Bertram Arthur; The Cottage, Stoke D'Abernon, Cobham, Surrey.

1908. Brook, Edward Jonas, F.Z.S.; Hoddam Castle, Ecclefechan, Dumfriesshire.

1890. Brooke, Harry Brinsley; Woodcote Lodge, Windlesham, Surrey.

1899. Brooke, John Arthur, J.P.; Fenay Hall, Huddersfield; and Fearn Lodge, Ardgay, Ross-shire.

1912. Brown, Thomas Edward; c/o Messrs. G. Beyts & Co., 11 Port Tewfik, Suez, Egypt.

55 1900. Bruce, William Speirs, LL.D., F.R.S.E.; Scottish Oceanographical Laboratory, Surgeon's Hall, Edinburgh.

1914. Buchanan, Col. Kenneth (Indian Army); c/o Messrs. Cox & Co., 16 Charing Cross, S.W.

1907. Buckley, Charles Mars; 4 Hans Crescent, S.W.

1906. Bucknill, John Alexander Strachey, K.C., M.A., F.Z.S.; Chief Justice, Supreme Court, Singapore, Straits Settlements.

1895. Bulgaria, H.M. Ferdinand, King of, F.Z.S.; The Palace, Sofia, Bulgaria.

60 1908. Bunyard, Percy Frederick, F.Z.S.: 57 Kidderminster Road, Croydon, Surrey.

Date of Election.

1907. BUTLER, ARTHUR GARDINER, Ph.D., F.L.S., F.Z.S.; 124 Beckenham Road, Beckenham, Kent.

1899. BUTLER, ARTHUR LENNOX, F.Z.S.; Superintendent of Game Preservation, Sudan Government, Khartum, Sudan.

1884. BUTLER, Lieut.-Col. E. A.; Winsford Hall, Stokesby, Great Yarmouth.

1900. BUTTRESS, BERNARD A. E.; Craft Hill, Dry Drayton, Cambridge.

65 1905. BUXTON, ANTHONY; Knighton, Buckhurst Hill, Essex.

1884. BUXTON, GEOFFREY FOWELL, F.Z.S.; Dunston Hall, Norwich, Norfolk.

1912. BUXTON, PATRICK ALFRED; Fairhill, Tonbridge, Kent.

1896. CAMERON, Capt. JAMES S.; (2nd Bn. Royal Sussex Regt.) Low Wood, Bethersden, Ashford, Kent.

1888. CAMERON, JOHN DUNCAN; Low Wood, Bethersden, Ashford, Kent.

70 1909. CAMPBELL, DAVID CALLENDER, J.P.; Templemore Park, Londonderry, Ireland.

1909. CARROLL, CLEMENT JOSEPH; Rocklow, Fethard, Co. Tipperary, Ireland.

1904. CARRUTHERS, ALEXANDER DOUGLAS M.; 7 Park Place, St. James', S.W.

1908. CARTER, THOMAS; Wensleydale, Mulgrave Road, Sutton, Surrey.

1890. CAVE, Capt. CHARLES JOHN PHILIP, M.A., F.Z.S.; Ditcham Park, Petersfield, Hants.

75 1913. CHAPLIN, NUGENT; The Lodge, Bourne End, Bucks.

1884. CHAPMAN, ABEL, F.Z.S.; Houxty, Wark-on-Tyne, Northumberland.

1882. CHASE, ROBERT WILLIAM; Herne's Nest, Bewdley, Worcestershire.

1908. CHEESMAN, ROBERT E.; c/o F. V. Winch, Esq., North View, Willesley, Cranbrook, Kent.

1910. CHUBB, CHARLES, F.Z.S.; British Museum (Natural History), Cromwell Road, S.W.

80 1912. CLARK, GEORGE WINGFIELD, M.A., F.Z.S.; 2 Devana Terrace, Huntingdon Road, Cambridge.

1904. CLARKE, Major GOLAND VAN HOLT, D.S.O., F.Z.S.; Chilworth Court, Romsey, Hants.

Date of Election.

1889. Clarke, Col. Stephenson Robert, C.B., F.Z.S.; Borde Hill, Cuckfield, Sussex.

1880. Clarke, William Eagle, F.L.S.; Royal Scottish Museum, Edinburgh.

1904. Cochrane, Captain Henry Lake. R.N.; 10 Ashburton Road, Southsea, Hants.

85 1898. Cocks, Alfred Heneage, M.A., F.Z.S.; Poynetts, Skirmett, near Henley-on-Thames, Oxon.

1895. Coles, Richard Edward; Rosebank, New Milton, S.O., Hants.

1911. Collett, Anthony Keeling; 5 Stone Buildings, Lincoln's Inn, W.C.

1904. Collier, Charles, F.Z.S.; Bridge House, Culmstock, Devon; and Windham Club, St. James' Square, S.W.

1909. Congreve, Capt. William Maitland (R.G.A.); Forest House, Kerry, Montgomeryshire.

90 1913. Cook, James Pemberton; c/o Messrs. Wallace & Co., Bombay Burmah Trading Corporation, Ltd., Bombay, India.

1888. Cordeaux, Major William Wilfrid, (late 21st Lancers); Hopebourne, Harbledown, Canterbury, Kent.

1914. Courtois, The Rev. F. L., S.J.; Curator of the Sikawei Museum, near Shanghai, China.

1913. Cowan, Francis; Wester Lea, Murrayfield, Midlothian.

1894. Crewe, Sir Vauncey Harpur, Bt.; Calke Abbey, Derby.

95 1903. Crowley, John Cyril, M.A.; 5 Beech House Road, Croydon, Surrey.

1915. Currie, Robert Alexander (Chinese Customs); The Custom House, Yochow, by Hankow, China.

1899. Curtis, Frederick, F.R.C.S.; Lyndens, Redhill, Surrey.

1877. Dalgleish, John J.; Brankston Grange, Bogside Station, Alloa, Forth.

1896. Danford, Capt. Bertram W. Y., R.E.; Bermuda.

100 1883. Davidson, James, F.Z.S.; 32 Drumsheugh Gardens, Edinburgh.

1908. Davies, Lieut. Claude G.; 3rd S. African Mounted Riflemen, 6th Mounted Brigade, c/o Army Post Office, Cape Town, South Africa.

1905. Davis, K. J. Acton, M.C., F.R.C.S., F.Z.S.; 16 Upper Wimpole Street, W.

1915. Dawson, George Hogarth, F.Z.S.: 29 Lansdowne Crescent, Notting Hill, W.

Date of Election.

1909. Delmé-Radcliffe, Capt. Alfred (105th Maratha Light Infantry); Church Hatch, Christchurch, Hants.; and c/o Messrs. Cox & Co., Bombay, India.

105 1902. Dent, Charles Henry; c/o Messrs. Barclay & Co. Ltd., Darlington, Durham.

1893. De Winton, William Edward, F.Z.S.; Southover Hall, Burwash, Sussex.

1896. Dobbie, James Bell, F.R.S.E., F.Z.S.; 12 South Inverleith Terrace, Edinburgh.

1889. Dobie, William Henry, M.R.C.S.; 2 Hunter Street, Chester.

1911. Dodsworth, Pelham Theobald Landale; Prospect Cottage, Simla, W., (Punjab), India.

110 1904. Dorrien-Smith, Thomas Algernon, J.P., D.L.; Tresco Abbey, Scilly Isles.

1904. Drake-Brockman, Ralph Evelyn, M.R.C.S., L.R.C.P., F.Z.S.; Cheriton, 26 Portchester Road, Bournemouth, Hants.

1865. Dresser, Henry Eeles, F.L.S., F.Z.S.; c/o Dr. Tattersall, Owen's College Museum, Manchester.

1896. Drewitt, Frederic Dawtrey, M.A., M.D., F.Z.S.; 14 Palace Gardens Terrace, Kensington, W.

1913. Drummond, James, F.L.S., F.Z.S.; 'Lyttelton Times,' Christchurch, New Zealand.

115 1890. Drummond-Hay, Col. James A. G. R.- (Coldstream Guards); Seggieden, by Perth.

1904. Duckworth, George Herbert; Dalingridge Place, *viâ* East Grinstead, Sussex.

1878. Durnford, W. Arthur, J.P.; Elsecar, Barnsley, Yorks.

1905. Dutton, The Hon. and Rev. Canon Frederick George; Bibury, Fairford, Gloucestershire.

1903. Earle, Edward Vavasour; Fowden Hall, London Road, Maidstone, Kent.

120 1914. Edwards, Laurence Albert Curtis, M.A.; 12 Market Street, Rye, Sussex.

1895. Elliot, Edmund A. S., M.R.C.S.; Woodville, Kingsbridge, South Devon.

1884. Elliott, Algernon, C.I.E.; 16 Belsize Grove, Hampstead, N.W.

1902. Ellison, The Rev. Allan, M.A.; Althorpe Rectory, Doncaster. Yorks.

Date of Election.

1904. Elton, Henry Brown, B.A., M.B., B.C., M.R.C.S., L.R.C.P.; Glenview, Llandovery, South Wales.

125 1866. Elwes, Henry John, F.R.S., F.Z.S.; Colesborne, Cheltenham, Gloucestershire.

1914. Etheridge, Robert, Junr., C.M.Z.S.; Curator of the Australian Museum, Sydney, New South Wales, Australia.

1879. Evans, Arthur Humble, M.A., F.Z.S.; 9 Harvey Road, Cambridge.

1888. Evans, William, F.R.S.E.; 38 Morningside Park, Edinburgh.

1905. Ewen, Guy L'Estrange; St. James's Club, Piccadilly, W.

130 1892. Fairbridge, William George; 141 Long Market Street, Capetown, South Africa.

1909. Fanshawe, Capt. Richard D. (late Scots Guards); Broxmore, Cavendish Road, Bournemouth.

1894. Farquhar, Rear-Admiral Arthur Murray, C.V.O.; Granville Lodge, Aboyne, Aberdeenshire.

1898. Farquhar, Capt. Stuart St. J., R.N.; Naval & Military Club, Piccadilly, W.

1873. Feilden, Col. Henry Wemyss, C.B., C.M.Z.S.; Burwash, Sussex; and Junior United Service Club, S.W.

135 1901. Finlinson, Horace W., F.Z.S.; 5 Rosamond Road, Bedford.

1885. Fitzherbert-Brockholes, William Joseph; Claughton Hall, Garstang, Lancashire.

1902. Flower, Major Stanley Smyth, F.Z.S.; Kedah House, Zoological Gardens, Giza, Egypt.

1912. Floyd, James Francis Murray, B.A.; The University, Glasgow.

1884. Forbes, Henry Ogg, LL.D., F.Z.S.; Redcliffe, Beaconsfield, Bucks.

140 1912. Foster, Arthur H., M.R.C.S., L.R.C.P.; Sussex House, 88 Tilehouse Street, Hitchin, Herts.

1903. Foster, Nevin Harkness, F.L.S., M.R.I.A.; Hillsborough, Co. Down, Ireland.

1880. Foster, William; 39 Colville Gardens, Bayswater, W.

1887. Fowler, William Warde, M.A.; Lincoln College, Oxford.

1865. Fox, The Rev. Henry Elliott, M.A,; The Croft, Lytton Grove, Putney Hill, S.W.

145 1881. Freke. Percy Evans; South Point, Limes Road, Folkestone.

Date of Election.

1895. Frohawk, Frederick William, F.E.S.; Stanley House, Park Road, Wallington, Surrey.

1909. Frost, William Edward, J.P.; Ardvreck, Crieff, Perthshire.

1881. Gadow, Hans, Ph.D., F.R.S., F.Z.S.; University Museum of Zoology, Cambridge.

1886. Gainsborough, Charles William Francis, Earl of; Exton Park, Oakham, Rutland.

150 1907. Gandolfi, Alfonso Otho Gandolfi-Hornyold, Duke, Ph.D.; Blackmore Park, Hanley Swan, Worcestershire.

1900. Garnett, Charles; Greathouse, Chippenham, Wilts.; and New University Club, St. James's Street, S.W.

1892. Gerrard, John; Worsley, near Manchester, Lancs.

1902. Gibbins, William Bevington, F.Z.S.; Ettington, Stratford-on-Avon, Warwickshire.

1879. Gibson, Ernest, F.L.S., F.Z.S., F.R.G.S.; 25 Cadogan Place, S.W.

155 1903. Gladstone, Capt. Hugh Steuart, M.A., F.Z.S., F.R.S.E., F.S.A.Scot.; Capenoch, Thornhill, Dumfriesshire; and 40 Lennox Gardens, S.W.

1908. Godman, Capt. Edward Shirley (2nd Dorset Regiment); Hampsteel, Cowfold, Sussex.

1858. Godman, Frederick DuCane, D.C.L., F.R.S., F.Z.S.; 45 Pont Street, S.W.; and South Lodge, Horsham, Sussex. (*Gold Medallist.*)

* 1858. Godman, Percy Sanden, B.A., C.M.Z.S.; Hampsteel, Cowfold, Sussex. (*Gold Medallist.*)

1906. Goodall, Jeremiah Matthews; The Nest, Bembridge, Isle of Wight.

160* 1900. Goodfellow, Walter, F.Z.S.; The Poplars, Kettering, Northants.

1906. Gordon, Seton Paul, F.Z.S.; Auchintoul, Aboyne, Aberdeenshire.

1912. Gosse, Philip, M.R.C.S., L.R.C.P.; Curtlemead, Beaulieu, Hants.

1899. Gould, Francis Herbert Carruthers, F.Z.S.; Matham Manor House, East Molesey, Surrey.

1895. Grabham, Oxley, M.A.; The Museum, York.

165 1909. Grant, Claude Henry Baxter, F.Z.S.; (6th Battn. Rifle Brigade); 6 Lebanon Gardens, West Hill, S.W.; and Sports Club, St. James' Square, S.W.

1913. Greening, Linnæus, F.L.S., F.Z.S.; Fairlight, Grappenhall, Cheshire.

Date of Election.

1909. Grey, The Rt. Hon. Sir Edward, Bt., K.G., P.C., F.Z.S.; Falloden, Christon Bank, R.S.O., Northumberland.

1906. Griffith, Arthur Foster; 59 Montpellier Road, Brighton, Sussex.

1885. Guillemard, Francis Henry Hill, M.A., M.D., F.Z.S.; Old Mill House, Trumpington, Cambridge.

170 1908. Gurney, Gerard Hudson, F.Z.S., F.E.S.; Keswick Hall, Norwich, Norfolk.

1870. Gurney, John Henry, F.Z.S.; Keswick Hall, Norwich; and Athenæum Club, Pall Mall, S.W.

1896. Gurney, Robert, F.Z.S.; Ingham Old Hall, Stalham, Norfolk.

1890. Gwatkin, Joshua Reynolds Gascoign; The Manor House, Potterne, Devizes, Wilts.

1891. Haigh, George Henry Caton; Grainsby Hall, Great Grimsby, Lincolnshire.

175 1887. Haines, John Pleydell Wilton; 17 King Street, Gloucester.

1898. Hale, The Rev. James Rashleigh, M.A.; Boxley Vicarage, Maidstone, Kent.

1905. Hamerton, Major Albert Edward, D.S.O., R.A.M.C., F.Z.S.; c/o Messrs. Holt & Co., 3 Whitehall Place, S.W.

1913. Hardy, Capt. Ernest Clifford, R.N.; Hydrographic Department, Admiralty, Whitehall, S.W.

1904. Harington, Lt.-Col. Herbert Hastings; 84th Punjabis, Rawal Pindi, India; and c/o Messrs. Thos. Cook & Sons, Ludgate Circus, E.C.

180 1900. Harper, Edmund William, F.Z.S.; 6, Ashburnham Road, Bedford.

1900. Harris, Henry Edward; 2 St. Aubyn's Mansions, Hove, Sussex.

1893. Hartert, Ernst J. O., Ph.D., F.Z.S.; The Zoological Museum, Tring, Herts.

1868. Harting, James Edmund, F.Z.S.; Portmore Lodge, Weybridge, Surrey.

1893. Hartmann, William; Milburn, Esher, Surrey.

185 1873. Harvie-Brown, John A., LL.D., F.R.S.E., F.Z.S.; Dunipace, Larbert, Stirlingshire.

1900. Hasluck, Percy Pedley Harford; The Wilderness, Southgate, N.

1902. Hatfeild, John Randall; Edlington Hall, Horncastle, Lincolnshire.

Date of Election.

1898. Hawker, Richard Macdonnell, F.Z.S.; Bath Club, Dover Street, W.; and c/o Messrs. Dalgety & Co., 96 Bishopsgate, E.C.

1905. Hawkshaw, John Clarke, M.A., M.I.C.E., F.G.S.; Hollycombe, Liphook, Hants.; and 33 Great George Street, Westminster, S.W.

190 1905. Headley, Frederick Webb, M.A., F.Z.S.; Haileybury College, Hertford.

1902. Hett, Geoffrey Seccombe, M.B., F.Z.S.; 8 Wimpole Street, W.

1913. Hewitt, John, M.A.; Director of the Albany Museum, Grahamstown, South Africa.

1899. Heywood, Richard, F.Z.S.; Pentney House, Narborough, Swaffham, Norfolk.

1900. Hills, Capt. John Waller.; 3 Lexham Gardens, Kensington, W.

195 1884. Holdsworth, Charles James, J.P.; Fernhill, Alderley Edge, Cheshire.

1912. Hony, George Bathurst; 4 Beaufort Road, Clifton, Bristol.

1905. Hopkinson, Emilius, M.B., D.S.O., F.Z.S.; 45 Sussex Square, Brighton, Sussex; and Bathurst, Gambia, West Africa.

1904. Horsbrugh, Lt.-Col. Boyd Robert, F.Z.S.; Tandridge Priory, Oxted, Surrey.

1888. Horsfield, Herbert Knight; Crescent Hill, Filey, Yorks.

200 1895. Howard, Henry Eliot, F.Z.S.; Clarelands, near Stourport, Worcestershire.

1881. Howard, Robert James; Shearbank, Blackburn, Lancashire.

1911. Hudson, Edward, 15 Queen Anne's Gate, S.W.

1911. Hudson, Reginald; 16 Warwick Road, Stratford-on-Avon.

1901. Ingram, Capt. Collingwood, F.Z.S.; Sussex Mansions, Westgate-on-Sea, Kent.

205 1902. Innes Bey, Dr. Walter Francis; Curator of the Zoological Museum, School of Medicine, Cairo, Egypt.

1913. Iredale, Tom; 98 Riverview Gardens, Barnes, S.W.

1888. Jackson, Sir Frederick John, C.B., K.C.M.G., F.L.S., F.Z.S.; Entebbe, Uganda, British East Africa; and The Red House, Aldeburgh, Suffolk.

1892. James, Henry Ashworth, F.Z.S.; Hurstmonceux Place, Hailsham, Sussex.

1896. Jesse, William, B.A., F.Z.S.; Meerut College, Meerut, India.

Date of Election.

210 1889. JOHNSON, FREDERICK PONSONBY, B.A., J.P., D.L.; Castlesteads, Brampton, Cumberland.

1915. JOHNSON, Sir HENRY JAMES, F.Z.S.; 55 Sloane Gardens, S.W.

1891. JOHNSTON, Sir HARRY HAMILTON, G.C.M.G., K.C.B., F.Z.S.; St. John's Priory, Poling, near Arundel, Sussex.

1905. JOHNSTONE, EDWIN JAMES, F.Z.S.; Burrswood, Groombridge, Sussex; and Junior Carlton Club, Pall Mall, S.W.

1900. JONES, Major HENRY, F.Z.S. (late 62nd Regt.); 41 Vineyard Hill Road, Wimbledon Park, S.W.

215 1909. JONES, Fleet-Surgeon KENNETH HURLSTONE, M.B., Ch.B., F.Z.S., R.N.; The Manor House, St. Stephen's, Canterbury, Kent.

1899. JOURDAIN, The Rev. FRANCIS CHARLES ROBERT, M.A.; Appleton Rectory, Abingdon, Berks.

1902. JOY, NORMAN HUMBERT, M.R.C.S., L.R.C.P.; Thurlestone, Bradfield, near Reading, Berks.

1880. KELHAM, Brigadier-General HENRY ROBERT, C.B. (late Highland Light Infantry); Army and Navy Club, Pall Mall, S.W.

1894. KELSALL, Lt.-Col. HARRY JOSEPH, R.A.; Artillery House, Sheerness.

220 1897. KELSALL, The Rev. JOHN EDWARD, M.A.; Milton Rectory, New Milton, Hants.

1904. KELSO, JOHN EDWARD HARRY, M.D.; Braeside, Edgewood, Lower Arrow Lake, British Columbia.

1914. KENNEDY, JOHN NOBLE; (Lieut. R.G.A.), c/o J. G. Gordon, Esq., Corsemalzie, Whauphill, Wigtownshire.

1891. KERR, JOHN GRAHAM, F.R.S., F.Z.S., Regius Professor of Zoology; 9 The University, Glasgow.

1895. KINGSFORD, WILLIAM EDWARD; Cairo, Egypt.

225 1902. KINNEAR, NORMAN BOYD, C.M.Z.S.; Bombay Natural History Society, 6 Apollo Street, Bombay, India.

1910. KLOSS, CECIL BODEN, F.Z.S., F.R.A.I.; Assistant Director of Museums, Kuala Lumpur, Federated Malay States.

1900. KOENIG, Dr. ALEXANDER FERDINAND; Coblenzer-Strasse 164, Bonn, Germany.

1906. KOLLIBAY, PAUL; Ring 121, Neisse, Germany.

1892. LAIDLAW, THOMAS GEDDES; Bank of Scotland House, Duns, Berwickshire.

230 1913. LAMBERT, GODFREY CHARLES; Woodcote, Esher, Surrey.

Date of Election.

1884. Langton, Herbert; St. Moritz, 61 Dyke Road, Brighton, Sussex.

1881. Lascelles, The Hon. Gerald William, F.Z.S.; Tillington House, Petworth, Sussex.

1892. La Touche, John David Digues, C.M.Z.S.; c/o Custom House, Chinwangtao, North China (*viâ* Siberia).

1910. Lees, T. O. Hastings, M.A., F.Z.S.; Buckmore, Petersfield, Hants.

235 1898. Le Souëf, Dudley, C.M.Z.S.; Director of the Zoological Gardens, Melbourne, Victoria, Australia.

1868. Le Strange, Hamon, F.Z.S.; Hunstanton Hall, King's Lynn, Norfolk.

1889. Leyland, Christopher John, F.Z.S.; Haggerston Castle, Beal, Northumberland.

1897. Lilford, John, Lord, F.Z.S.; Lilford Hall, Oundle, Northants.

1909. Lings, George Herbert; 208 Piermont Avenue, Nyack, N.Y., U.S.A.

240 1897. Lodge, George Edward, F.Z.S.; 5 The Studios, Thurloe Square, S.W.

1908. Long, Sydney Herbert, M.D., F.Z.S.; 31 Surrey Street, Norwich, Norfolk.

1904. Lowe, Percy R., B.A., M.B., B.C.; 27 Ormonde Gate, Chelsea, S.W.

1914. Lowe, Willoughby Prescott: Gorsemoor, Throwleigh, Okehampton, Devon.

1902. Lucas, The Right Hon. Auberon Thomas, Lord, P.C., F.Z.S.; 32 Old Queen Street, W.

245 1904. Lynes, Captain Hubert, R.N.; Garthmeilio, Corwen, N. Wales.

1905. McGregor, Peter James Colquhoun; H.M. Consul, British Consulate, Jerusalem, Palestine, Turkey-in-Asia.

1897. McLean, John Chambers; General Post Office, Wellington, New Zealand.

1899. Macmillan, George Augustin, F.Z.S.; 27 Queen's Gate Gardens, S.W.

1906. Macmillan, William Edward Frank; 42 Onslow Square, S.W.

250 1909. Macnaghten, Norman Donnelly, F.Z.S.; Ministry of the Interior, Cairo, Egypt.

1894. Macpherson, Arthur Holte, F.Z.S.; 21 Campden Hill Square, Kensington, W.

Date of Election.

1906. Magrath, Lt.-Col. Henry Augustus Frederick (54th Sikhs); c/o Messrs. H. S. King & Co., 9 Pall Mall, S.W.

1907. Mann, Thomas Hugh, F.Z.S.; Trulls Hatch, Rotherfield, Sussex.

1904. Mapleton, Harvey William, B.A.; Weare, Axbridge, Somerset.

255 1894. Marshall, Archibald McLean, F.Z.S.; Great Chitcombe, Brede, Sussex.

1894. Marshall, James McLean, F.Z.S.; Bleaton Hallet, Blairgowrie, Perthshire.

1897. Mason, Col. Edward Snow; 10 Lindum Terrace, Lincoln.

1898. Massey, Herbert; Ivy Lea, Burnage, Didsbury, Manchester.

1907. Mathews, Gregory Macalister, F.L.S., F.R.S.E., F.Z.S.; Foulis Court, Fair Oak, Hants.

260 1915. Maton, Eustace Bertie; Enford, Pewsey, Wilts.

1915. May, William Norman, M.D.; The White House, Sonning, Berks.

1883. Meade-Waldo, Edmund Gustavus Bloomfield, F.Z.S.; Hever Warren, Hever, Kent.

1912. Meiklejohn, Major Ronald Forbes, D.S.O. (1st. Bn. Royal Warwickshire Regt.); Sussex House, Sandgate, Kent.

1899. Meinertzhagen, Capt. Richard, F.Z.S. (Royal Fusiliers); c/o Messrs. Cox & Co., 16 Charing Cross, S.W.

265 1886. Millais, John Guille, F.Z.S.; Compton's Brow, Horsham, Sussex.

1903. Mills, The Rev. Henry Holroyd, M.A., F.Z.S.; The Rectory, St. Stephen-in-Brannel, Grampound Road, Cornwall.

1879. Mitchell, Frederick Shaw; Hornshaws, Millstream, B.C., Canada.

1901. Mitchell, P. Chalmers, M.A., D.Sc., LL.D., F.R.S., F.L.S., F.Z.S.; Secretary to the Zoological Society of London, Regent's Park, N.W.

1898. Monro, Sir Horace Cecil, K.C.B.; Queen Anne's Mansions, Queen Anne's Gate, S.W.

270 1914. Moulton, John Coney, F.Z.S.; 4th Wiltshire Regt., Delhi, India.

1912. Mouritz, L. Beresford; 2nd L.H. Regt., 1st Australian Light Horse Brigade.

1886. Muirhead, George, F.R.S.E.; Speybank, Fochabers, Morayshire.

Date of Election.

1893. Mullens, Major William Herbert, M.A., LL.M., F.Z.S.; Westfield Place, Battle, Sussex.

1892. Munn, Philip Winchester, F.Z.S.; Stourwood Cottage, Stourwood Avenue, Southbourne, Hants.

275 1897. Munt, Henry, F.Z.S.; 10 Ashburn Place, South Kensington, S.W. (*Committee.*)

1911. Murray, Capt. Edward Mackenzie; Woodside, Coupar-Angus, Perthshire.

1910. Murray, Capt. Herbert Willaume, F.Z.S.; The Old House, Epsom, Surrey.

1900. Musters, John Patricius Chaworth, D.L., J.P.; Annesley Park, Nottingham.

1907. Neave, Sheffield Airey, M.A., B.Sc., F.Z.S.; 24 De Vere Gardens, Kensington, W.

280 1882. Nelson, Thomas Hudson, J.P., M.Sc; Seafield, Redcar, Yorks.

1895. Nesham, Robert, F.Z.S., F.E.S.; Utrecht House, Poynder's Road, Clapham Park, S.W.

1904. Newman, Thomas Henry, F.Z.S.; Newlands, Harrowdene Road, Wembley, Middlesex.

1902. Nichols, John Bruce, F.Z.S.; Parliament Mansions, Victoria Street, S.W.

1900. Nichols, Walter Buchanan; Stour Lodge, Bradfield, Manningtree, Essex.

285 1876. Nicholson, Francis, F.Z.S.; The Knoll, Windermere, Westmoreland.

1902. Nicoll, Michael John, F.Z.S.; Valhalla House, Zoological Gardens, Giza, Egypt.

1904. Noakes, Wickham; Selsdon Park, Croydon, Surrey.

1892. Ogilvie, Fergus Menteith, M.A., F.Z.S.; The Shrubbery, 72 Woodstock Road, Oxford.

1890. Ogilvie-Grant, William Robert, F.Z.S.; British Museum (Natural History), Cromwell Road, S.W. (*Committee*).

290 1889. Ogle, Bertram Savile; Hill House, Steeple Aston, Oxon.

1907. Oldham, Charles, F.Z.S.; The Bollin, Shrublands Road, Berkhamsted, Herts.

1906. Osmaston, Bertram Beresford (Imperial Forest Service); 108 Banbury Road, Oxford.

1913. Owen, John Hugh; Old School House, Felsted, Essex.

1883. Parker, Henry, C.E.; 26 St. George's Road, St. Annes-on-the-Sea, Lancs.

Date of Election.

295 1880. Parkin, Thomas, M.A., F.L.S., F.Z.S.; Fairseat, High Wickham, Hastings, Sussex.

1908. Paton, Edward Richmond, F.Z.S.; Brookdale, Grassendale, near Liverpool, Lancs.

1891. Patterson, Robert, F.L.S., M.R.I.A.; Glenbank, Holywood, Co. Down, Ireland.

1911. Patterson, William Harry; 25 Queen's Gate Gardens, S.W.

1904. Pearse, Theed; 510 Duncan Building, 119 Pender Street, W., Vancouver, British Columbia.

300 1894. Pearson, Charles Edward, F.L.S.; Hillcrest, Lowdham, Notts.

1902. Pease, Sir Alfred Edward, Bt., F.Z.S.; Pinchinthorpe House, Guisborough, Yorkshire; and Brooks's Club, St. James's Street, S.W.

1898. Penn, Eric Frank; 42 Gloucester Square, W.

1891. Penrose, Francis George, M.D., F.Z.S.; Athenæum Club, Pall Mall, S.W.

1900. Percival, Arthur Blayney, F.Z.S.; Sports Club, St. James' Square, S.W.

305 1912. Pershouse, Capt. Stanley (1st Border Regt.); 12 Chatsworth Square, Carlisle.

1886. Phillips, Ethelbert Lort, F.Z.S.; 79 Cadogan Square, S.W.

1893. Pigott, Sir Thomas Digby, K.C.B.; The Lodge, Lower Sheringham, Norfolk.

1914. Pitman, Charles Robert Senhouse (Lieut. 27th Punjabis); Drewton, Chelston, Torquay.

1908. Player, W. J. Percy; The Quarr, Clydach, R.S.O., Glamorganshire.

310 1907. Pocock, Reginald Innes, F.R.S., F.L.S., F.Z.S.; Superintendent of the Zoological Gardens, Regent's Park, N.W.

1905. Pollard, Capt. Arthur Erskine St. Vincent (The Border Regiment); Haynford Hall, Norwich, Norfolk.

1896. Popham, Hugh Leyborne, M.A.; Hunstrete House, Pensford, near Bristol, Gloucestershire.

1898. Price, Athelstan Elder, F.Z.S.; 4 Mincing Lane, E.C.

1903. Proctor, Major Frederick William (late West Riding Regt.); Downfield, Maidenhead, Berks.

315 1901. Proud, John T.; Dellwood, Bishop Auckland, Durham.

1893. Pycraft, William Plane, F.Z.S.; British Museum (Natural History), Cromwell Road, S.W.

Date of
Election.

1903. Ralfe, Pilcher George; The Parade, Castletown, Isle of Man.

1903. Ratcliff, Frederick Rowlinson; 29 Connaught Square, W.

1879. Rawson, Herbert Evelyn; Comyn Hill, Ilfracombe, N. Devon.

320 1894. Read, Richard Henry, M.R.C.S., L.R.C.P.; Church Street, Hanley, Staffordshire.

1888. Read, Robert H.; 8*a* South Parade, Bedford Park, W.

1903. Renaut, William E.; 34 Marylebone Road, N.W.

1908. Richardson, Norman Frederic, F.R.G.S.; Lynndale, Manor Road, Forest Hill, S.E.

1907. Richmond, Herbert William, M.A., F.R.S.; King's College, Cambridge.

325 1895. Rickett, Charles Boughey, F.Z.S.; 27 Kendrick Road, Reading, Berks.

1896. Rippon, Lt.-Col. George, F.Z.S.; United Service Club, Pall Mall, S.W.

1907. Ritchie, Archibald Thomas Ayres; Magdalen College, Oxford; and Overstrand, near Cromer, Norfolk.

1902. Rivière, Bernard Beryl, F.R.C.S.; St. Giles's Plain, Norwich, Norfolk.

1898. Robinson, Herbert C., C.M.Z.S.; Selangor State Museum, Kuala Lumpur, Federated Malay States.

330 1912. Robinson, Herbert William, F.Z.S.Scot.; Patchetts, Caton, near Lancaster.

1896. Rogers, Lt.-Col. John Middleton, D.S.O., F.Z.S. (late 1st Dragoons); Riverhill, Sevenoaks, Kent.

1913. Rogers, Reginald Nankivell; Carwinion, near Falmouth, Cornwall.

1893. Rothschild, Lionel Walter, Lord, D.Sc., Ph.D., F.R.S., F.Z.S.; The Zoological Museum, Tring, Herts.

1894. Rothschild, The Hon. Nathaniel Charles, M.A., F.Z.S.; Arundel House, Kensington Palace Gardens, W.

335 1910. Rücker, Sir Arthur William, M.A., D.Sc., LL.D., F.R.S.; Everington House, Newbury, Berks.

1907. Russell, Conrad George Edward, F.Z.S.; 2 Audley Square, W.

1910. Russell, Harold, F.Z.S.; 16 Beaufort Gardens, Chelsea, S.W.

1883. St. Quintin, William Herbert, F.Z.S.; Scampston Hall, Rillington, Yorkshire.

Date of Election.

1903. Sandeman, Capt. Robert Preston (late 10th Hussars); Dan-y Parc, Crickhowell, S. Wales.

340 1889. Sapsworth, Arnold Duer, F.Z.S.; 30 Sussex Place, Regent's Park, N.W.

1902. Sargeaunt, Arthur St. George; Exbury, Padstow, Cornwall.

1904. Sargent, James; 76 Jermyn Street, S.W.

1914. Sauer, Dr. Hans, F.Z.S.; Bath Club, Dover Street, W.

1902. Saunders, Major William Henry Radcliffe, C.E., F.Z.S.; c/o Messrs. W. Saunders & Co. Ltd., 91 York Street, Westminster, S.W.

345 1909. Savage, The Rev. Ernest Urmson; The Vicarage, Levens, Milnthorpe, Westmoreland.

1891. Sclater, William Lutley, M.A., F.Z.S.; 10 Sloane Court, Chelsea, S.W. (*Editor.*)

1907. Scott, The Rev. Canon Samuel Gilbert, M.A.; The Rectory, Havant, Hants.

1899. Selous, Frederick Courteney, F.Z.S.; Heatherside, Worplesdon, Surrey.

1908. Seppings, Major John William Hamilton, A.P.D.; Army Pay Office, Dover, Kent.

350 1899. Serle, The Rev. William, M.A., B.D.; The Manse, Duddingston, Edinburgh.

1901. Seth-Smith, David, F.Z.S.; 34 Elsworthy Road, South Hampstead, N.W. (*Committee.*)

1904. Seth-Smith, Leslie Moffat, B.A., F.Z.S.; Alleyne, Caterham Valley, Surrey.

1909. Seton, Malcolm Cotter Cariston; 13 Clarendon Road, Holland Park, W.; and Union Club, Trafalgar Square, S.W.

1899. Sharman, Frederic, F.Z.S.; 47 Goldington Road, Bedford.

355 1865. Shepherd, The Rev. Charles William, M.A., F.Z.S.; Trottiscliffe Rectory, Maidstone, Kent.

1908. Smalley, Frederic William, F.Z.S.; Challan Hall, Silverdale, near Carnforth, Lancs.

1914. Smith, Major John Lindsay (Indian Army); Supply & Transport Corps, Commdt. Camel Corps, Multan, Punjab, India.

1906. Snouckaert van Schauburg, Baron René Charles; Doorn, Holland.

1903. Sparrow, Lt.-Col. Richard, F.Z.S. (7th Dragoon Guards); Rookwoods, Sible Hedingham, Essex.

Date of Election.

360 1906. Stanford, Staff-Surgeon Charles Edward Cortis, B.Sc., M.B., R.N.; 94 Jermyn Street, S.W.

1910. Stanford, Edward Fraser; 9 Cumberland House, Kensington Court, W.

1913. Stanford, Henry Morrant; 9 Cumberland House, Kensington Court, W.

1913. Stanford, John Keith; 9 Cumberland House, Kensington Court, W.

1915. Staples-Browne, Richard Charles, B.A., F.Z.S.; Bampton, Oxon.

365 1900. Stares, John William Chester; Portchester, Hants.

1902. Stenhouse, John Hutton, M.B., R.N.; Craigievar, Keptie Road, Arbroath, Forfarshire.

1910. Stevens, Herbert; Gopaldhara, Nagri Spur P.O., Sonada, Darjiling Himalayan Rly., India.

1906. Steward, Edward Simmons, F.R.C.S.; 30 Victoria Avenue, Harrogate, Yorks.

1914. Stewart, John; Mainshill, Beith, Ayrshire.

370 1914. Stresemann, Erwin; Residenzstrasse 42, Dresden, Germany.

1881. Studdy, Col. Robert Wright (late Manchester Regiment); Waddeton Court, Brixham, Devon.

1887. Styan, Frederick William, F.Z.S.; Stone Street, near Sevenoaks, Kent.

1914. Sutherland, Lewis Robertson, M.B., C.M., Professor of Pathology, University of St. Andrews, N.B.; Wellgate House, West Newport, Fifeshire.

1907. Swann, Geoffrey; 11 Onslow Crescent, S.W.

375 1905. Swann, Harold, F.Z.S.; 45 Brompton Square, S.W.

1887. Swinburne, John; Haenertsburg, Transvaal, South Africa.

1882. Swinhoe, Col. Charles, M.A., F.L.S., F.Z.S.; 6 Gunterstone Road, West Kensington, W.

1884. Tait, William Chaster, C.M.Z.S.; Entre Quintas 155, Oporto, Portugal.

1911. Talbot-Ponsonby, Charles George; 5 Crown Office Row, Temple, E.C.

380 1911. Tatton, Reginald Arthur; Cuerden Hall, Bamber Bridge, Preston, Lancs.

1914. Tavistock, Hastings William Sackville, Marquis of, F.Z.S.; Woburn Abbey, Bedfordshire.

Date of Election.

1905. Taylor, Lionel Edward, F.Z.S.; Bankhead, Kelowna, British Columbia.

1886. Terry, Major Horace A. (late Oxfordshire Light Infantry); Compton Grange, Compton, Guildford, Surrey.

1904. Thompson, Capt. William R., R.G.A.

385 1911. Thomson, A. Landsborough, M.A.; Castleton House, Old Aberdeen, Aberdeen.

1900. Thorburn, Archibald, F.Z.S.; High Leybourne, Hascombe, near Godalming, Surrey.

1893. Thorpe, Dixon L.; Loshville, Etterby Scaur, Carlisle, Cumberland.

1903. Ticehurst, Claud Buchanan, M.A., M.D., M.R.C.S.; Grove House, Lowestoft, Suffolk.

1894. Ticehurst, Norman Frederic, M.A., M.B., F.R.C.S., F.Z.S.; 35 Pevensey Road, St. Leonards-on-Sea, Sussex.

390 1902. Townsend, Reginald Gilliat, M.A.; Buckholt, West Tytherley, Salisbury, Wilts.

1914. Treatt, Chaplin Court; British Museum (Natural History), Cromwell Road, S.W.

1893. Trevor-Battye, Aubyn, F.Z.S.; Ashford Chace, Petersfield, Hants.; and Royal Societies Club, St. James's Street, S.W.

1913. Tuckwell, Edward Henry, F.Z.S.; Berthope, Compton, near Guildford, Surrey.

1911. Tyrwhitt-Drake, Hugh Garrard, F.Z.S.; Cobtree, Sandling, Maidstone, Kent.

395 1864. Upcher, Henry Morris, F.Z.S.; Sheringham Hall, Cromer, Norfolk.

1907. Van Oort, Dr. Eduard Daniel; Museum of Natural History, Leyden, Holland.

1910. Van Someren, Dr. Robert Abraham Logan; Jinja, Uganda, British East Africa.

1912. Van Someren, Dr. Victor Gurnet Logan; Uganda Medical Staff, c/o Post Office, Nairobi, British East Africa.

1908. Vaughan, Matthew; The Limes, Marlborough, Wilts.

400 1906. Vaughan, Commd. Robert E., R.N.; Royal Naval Barracks, Chatham.

1913. Venning, Capt. Francis Esmond Wingate; 31st Punjabis, Fort Sandeman, Baluchistan.

Date of Election.

1881. Verner, Col. William Willoughby Cole (late Rifle Brigade); Hartford Bridge, Winchfield, Hants.; and United Service Club, S.W.

1902. Wade, Edward Walter; Middelburg, North Ferriby, East Yorks.

1886. Wade-Dalton, Col. H. D.; Hauxwell Hall, Finghall, R.S.O., Yorkshire.

405 1895. Wallis, Henry Marriage; Ashton Lodge, Christchurch Road, Reading, Berks.

1914. Wall-Row, James; 67 Longridge Road, Earl's Court, S.W.

1899. Walton, Major Herbert James, M.D., F.R.C.S., C.M.Z.S., I.M.S.; c/o Messrs. King, King & Co., P.O. Box No. 110, Bombay, India.

1872. Wardlaw-Ramsay, Col. Robert George, F.Z.S.; Whitehill, Rosewell, Midlothian. (*President.*)

1903. Watt, Hugh Boyd, F.Z.S.; 12 Great James Street, Bedford Row, W.C.

410 1912. Wells, Charles Henry; Broomfield, 80 Brookhouse Hill, Fulwood, Sheffield, Yorks.

1912. Wenner, Max Victor; Burnside, Prestbury, near Macclesfield, Cheshire.

1900. Westell, W. Percival, F.L.S.; Verulam, The Icknield Way, Letchworth, Herts.

1913. Whistler, Hugh (Indian Police); c/o Messrs. King, King & Co., Bombay, India.

1891. Whitaker, Benjamin Ingham; Hesley Hall, Tickhill, Rotherham, Yorks.

415 1891. Whitaker, Joseph I. S., F.Z.S.; Malfitano, Palermo, Sicily.

1909. White, Henry Luke; Belltrees, Scone, New South Wales, Australia.

1912. White, Capt. Samuel Albert; Wetunga, Fulham, South Australia.

1903. White, Stephen Joseph, F.Z.S.; Merok, Chiltern Road, Chesham Bois, Chesham, Bucks.

1903. Whitehead, Major Charles Hugh Tempest; Deighton Grove, York.

420 1912. Whymper, Samuel Leigh; Oxford Mansions, Oxford Street, W.; and Oriental Club, Hanover Square, W.

Date of Election.

1914. **Wickham, Percy Frederic**; c/o Messrs. Thos. Cook & Son, Rangoon, Burma.

1898. **Wigglesworth, Joseph**, M.D., F.R.C.P.; Springfield House, Winscombe, Somerset.

1915. **Wild, Oliver Hilton**, Applegarth, Queen's Road, Cheltenham, Gloucestershire.

1894. **Wilkinson, Johnson**; Vermont, Huddersfield, Yorkshire.

425 1912. **Wilkinson, William Arthur**, F.Z.S.; Dumcrieff, Tudor Hill, Sutton Coldfield, Warwickshire.

1897. **Wilson, Allan Read**, B.A., M.B., B.Ch.; Eagle House, Blandford, Dorset.

1888. **Wilson, Charles Joseph**, F.Z.S.; 34 York Terrace, Regent's Park, N.W.

1887. **Wilson, Scott Barchard**, F.Z.S.; Heatherbank, Weybridge Heath, Surrey.

1897. **Witherby, Harry Forbes**, F.Z.S.; 3 Cannon Place, Hampstead, N.W.

430 1908. **Witherington, Gwynne**; 19 Sumner Place, South Kensington, S.W.

1899. **Wollaston, Alexander Frederick Richmond**, B.A.; 15 Montpelier Square, S.W.

1912. **Wood, Martin Stanley**, M.D.; Cheadle Royal, Cheadle, Cheshire.

1912. **Woodhouse, Cecil**, M.D.; Chetnole, Sherborne, Dorset.

1902. **Workman, William Hughes**; Lismore, Windsor, Belfast, Ireland.

435 1912. **Wormald, Hugh**; Heathfield, Dereham, Norfolk.

1904. **Wright, William Crawford**; Roslyn, Marlborough Park, N., Belfast, Ireland.

1908. **Wynne, Richard Owen**; Foulis Court, Fair Oak, Hants.

1895. **Yerbury**, Lt.-Col. **John William** (late R.A.), F.Z.S.; 2 Ryder Street, St. James's, S.W.; and Army and Navy Club, S.W.

1889. **Young**, Capt. **James B.**, R.N.; Tytherley, Wimborne, Dorset.

Extra-Ordinary Member.

1899. **Godwin-Austen**, Lt.-Col. **Henry Haversham**, F.R.S., F.Z.S.; Nore, Hascombe, Godalming, Surrey.

Honorary Members.

Date of Election.

1907. Allen, Joel Asaph, Ph.D., F.M.Z.S.; American Museum of Natural History, Central Park, New York, U.S.A.

1914. Bianchi, Dr. Valentine; Imperial Zoological Museum, Petrograd, Russia.

1872. Finsch, Prof. Dr. Otto, C.M.Z.S.; Leonhardplatz 5, Brunswick, Germany.

1898. Goeldi, Prof. Dr. Emil A., C.M.Z.S.; Zieglerstrasse 36, Berne, Switzerland.

5 1893. Reichenow, Dr. Anton, C.M.Z.S.; Museum für Naturkunde, Invalidenstrasse, Berlin, Germany.

1915. Richmond, Charles Wallace; United States National Museum, Washington, D.C., U.S.A.

1903. Ridgway, Robert, C.M.Z.S.; Smithsonian Institution, Washington, D.C., U.S.A.

1890. Salvadori, Count Tommaso, M.D., F.M.Z.S.; Royal Zoological Museum, Turin, Italy.

1914. Schalow, Prof. Herman; Hohenzollerndamm 50, Berlin-Grunewald, Germany.

Honorary Lady Members.

1910. Bate, Miss Dorothy M. A.; Bassendean House, Gordon, Berwickshire.

1911. Baxter, Miss Evelyn Vida; The Grove, Kirkton of Largo, Fifeshire.

1910. Bedford, Mary, Duchess of, F.Z.S.; Woburn Abbey, Beds.

1915. Jackson, Miss Annie C.; Swordale, Evanton, Ross-shire.

5 1910. Lemon, Mrs. Margaretta Louisa, F.Z.S.; Hillcrest, Redhill, Surrey.

1911. Rintoul, Miss Leonora Jeffrey; Lahill, Largo, Fifeshire.

1915. Snethlage, Dr. Emilie; Goeldi Museum, Pará, Brazil.

1910. Turner, Miss Emma Louisa, F.Z.S.; The Old Rectory, Girton, Cambridge.

Colonial Members.

1904. Campbell, Archibald James; Custom House, Melbourne, Australia.

1908. Farquhar, John Henry Joseph, B.Sc., N.D.A.; Assistant Conservator of Forests, Calabar, Southern Nigeria, West Africa.

Date of Election.

1910. Fleming, James H., C.M.Z.S.; 267 Rusholme Road, Toronto, Canada.

1909. Haagner, Alwin Karl, F.Z.S.; Director of the Zoological Gardens, Box 754, Pretoria, South Africa.

5 1908. Hall, Robert, F.L.S., C.M.Z.S.; c/o Tasmanian Museum, Hobart, Tasmania.

1914. Leach, John Albert, M.A., D.Sc.; c/o Education Department, Melbourne, Australia.

1903. Legge, Col. W. Vincent; Cullenswood House, St. Mary's, Tasmania.

1905. Macoun, John, M.A., F.R.S.C.; Naturalist to the Geological Survey of Canada, Ottawa, Canada.

1903. North, Alfred J., C.M.Z.S.; Australian Museum, Sydney, New South Wales, Australia.

10 1907. Swynnerton, Charles Francis Massy, F.L.S.; Gungunyana, Melsetter, South Rhodesia.

Foreign Members.

1909. Alphéraky, Sergius N.; Imperial Academy of Science, Petrograd, Russia.

1880. Bureau, Dr. Louis; École de Médecine, Nantes, France.

1906. Büttikofer, Dr. Johannes, C.M.Z.S.; Director of the Zoological Garden, Rotterdam, Holland.

1906. Buturlin, Sergius A.; Wesenberg, Esthonia, Russia.

5 1902. Chapman, Frank Michler; American Museum of Natural History, Central Park, New York, U.S.A.

1875. Doria, Marchese Giacomo, F.M.Z.S.; Strada Nuova 6, Genoa, Italy.

1914. Hellmayr, Carl E.; Wittelsbacherstrasse 2 III., Munich, Germany.

1902. Ihering, Dr. Herman von, C.M.Z.S.; Museu Paulista, São Paulo, Brazil.

1914. Lönnberg, Prof. Dr. A. J. Einar, F.M.Z.S.; Director of the Zoological Museum, Stockholm, Sweden.

10 1886. Madarász, Dr. Julius von; National Museum, Budapest, Hungary.

1903. Martorelli, Prof. Dr. Giacinto; Museo Civico di Storia Naturale, Milan, Italy.

1894. Menzbier, Prof. Dr. Michael, C.M.Z.S.; University for Women, Devitchje, Pola, Moscow, Russia.

Date of
Election.

1905. Oberholser, Harry Church; Biological Survey, Department of Agriculture, Washington, D.C., U.S.A.

1900. Reiser, Dr. Otmar; Landes Museum, Sarajevo, Bosnia, Austria.

15 1900. Stejneger, Leonhard, C.M.Z.S.; Smithsonian Institution, Washington, D.C., U.S.A.

1914. Stone, Dr. Witmer; Academy of Natural Sciences, Philadelphia, Pa., U.S.A.

1902. Sushkin, Dr. Peter, C.M.Z.S.; Zootomical Cabinet and Museum, The University, Kharkov, Russia.

1911. Tschusi zu Schmidhoffen, Victor, Ritter von; Villa Tännenhof, bei Hallein, Salzburg, Austria.

1896. Winge, Herluf, C.M.Z.S.; University Zoological Museum, Copenhagen, Denmark.

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THE IBIS.

TENTH SERIES.

Vol. III. No. 1. JANUARY 1915.

I.—*On a Collection of Birds from British East Africa and Uganda, presented to the British Museum by Capt. G. S. Cozens.*—Part I. STRUTHIONIFORMES—PELECANIFORMES. By CLAUDE H. B. GRANT, F.Z.S., M.B.O.U. *With Field Notes by the Collector,* WILLOUGHBY P. LOWE, M.B.O.U.

(Plates I. & II. and Text-figures 1 & 2.)

INTRODUCTION.

THE collection which I am about to discuss was made by Mr. Willoughby P. Lowe, who, at the request of Capt. G. S. Cozens, was recommended by the British Museum of Natural History to accompany him as naturalist on his recent expedition through British East Africa and Uganda. Mr. Lowe's previous excellent work as a collector is well known, and the present collection has fully come up to his usual high standard, both in numbers and species; and I may perhaps be allowed to congratulate the collector on the results, and also Capt. Cozens, without whose generosity this interesting series would never have been obtained.

On the 19th of August, 1912, Mr. Lowe left England and joined Capt. Cozens at Nairobi on the 17th of the following month.

Two separate trips were made during the few months spent in East Africa ; the first from Kijabe Station, southwards to the Anglo-German Border, and back to Naivasha Station, between Sept. 24 and Dec. 9, 1912 ; and the second trip starting from Nakuro Station, northwards through the always interesting Rift Valley, and across to Nimule and Gondokoro on the White Nile, between Dec. 21, 1912, and March 5, 1913.

A few birds were also obtained at Kikuyu, on Mr. Judd's farm, on Sept. 21, 22, and 23, before starting for the Anglo-German Boundary, and again on the return at Lake Naivasha on Dec. 12, before leaving for the north.

The new subspecies described here or in the Bulletin of the B.O.C. are three in number, as follows :—

Pterocles quadricinctus lowei, *Stigmatopelia senegalensis sokotræ*, and *Scopus umbretta bannermani*.

The classification followed is that of Dr. Sharpe's 'Hand-list of Birds,' and in every case I have given reference only to the original description of each species or subspecies ; all these have been personally checked, and where other works have been mentioned, the reference has been included in the matter under discussion.

I have also followed the modern and useful rule of trinomials wherever necessary, and have endeavoured to keep strictly to priority, as only by this means can all controversy on the question of names be ultimately eliminated.

I have to thank Mr. Ogilvie-Grant for so kindly allowing me to work out this collection, and for much help and advice, Mr. Tom Iredale for very considerable help on questions of nomenclature, and Mr. W. L. Sclater for valuable assistance.

I also have to thank Mr. Charles Chubb and Mr. Thomas Wells, of the Bird Room, for much assistance.

This part covers the collection up to the end of the Pelicans, and includes 92 species and subspecies.

Mr. Willoughby Lowe's field and other notes are enclosed in square brackets to distinguish them from my own comments.

DESCRIPTION OF THE ROUTE.

Mr. Lowe has kindly sent me a description of the country passed through and the difficulties experienced by Capt. Cozens' party; these include some interesting notes on the fauna and flora, amongst which attention may be drawn to a valuable new record of the occurrence in British East Africa of Verreaux's Eagle.

I will here leave Mr. Lowe to continue the tale of the expedition, the route of which can be followed on the map specially prepared to illustrate it (Plate I.).

"A few days having been spent at Nairobi, we left for Mr. Judd's farm near Kikuyu; around there the country is open and very fertile, with coffee plantations and a few clumps of trees planted here and there. Birds were plentiful. From Kikuyu we proceeded to Kijabe Station, where we picked up our porters and started for the southern trip. The country between Kijabe and Mt. Suswa was at first wooded, and later opened out into extensive plains which were found to be hot, dry, and dusty. No water could be had until we reached Mt. Suswa, even then it was not at all plentiful, and by no means good. Our camp was pitched at the foot of Mt. Suswa, where game abounds and is very tame. Ostriches were quite numerous, and in the bush skirting the plains I surprised a fine male within range of my 12-bore. Leaving Mt. Suswa we moved on to the Mau Escarpment, passing westwards across the Loita Plains and Lemek Valley to the Amala River, which we reached on Oct. 9. The country hereabouts is very grassy and park-like and teems with game, and birds are likewise abundant. It was along this river, under a shady tree, that on Oct. 22 I flushed a Pennant-winged

Nightjar, and so interested and surprised was I at my first sight of this curious bird, that I allowed it to escape across the river ; unfortunately this was the only time this bird was seen.

"By Oct. 25 we were twelve miles east of the Amala River and only eight miles from the Anglo-German Boundary, where there is a pleasant little water-course with large trees and dense foliage. Here several new birds were observed, such as Trogons, Bush-Robin, etc. ; whilst baboons abounded, feeding on the fruit of the wild fig. Four days later we were west of Leganisho—the country being very stony and well wooded, the small stream running in places through solid rock with deep holes and precipitous banks. On Nov. 2 we arrived at the Narossura River, with its clear running water and banks fringed with tall junipers and other bushes. Francolins (*Pternistes leucoscepus infuscatus*) were common, and large Swifts passed up and down the stream high overhead. From the Narossura we moved to Lengototo, and pitched our camp at 6000 ft. in a good buffalo country, well wooded and watered, and surrounded with hills. On Nov. 12 we moved again to the Narossura River, and camped at 5000 ft. ; the country being stony near the river, as also are the dry hills, which are dotted with a few small trees and bushes, with luxuriant grass in places. Below our camp the river rushes down and over a waterfall of about 200 ft. to meet the southern Guaso Nyiro. On Nov. 19 the Martial Eagle (*Spizaëtus bellicosus*) was observed. The tsetse fly being bad below, we left our dogs and mules behind and descended to Lake Magadi, which we could see from our camp, and so to the southern Guaso Nyiro. Down there the weather became hot, and travelling was difficult owing to the deep ravines which intersect the country. Here the first pair of Pygmy Sparrow Hawks (*Accipiter minullus*) were seen, and assembled on the ground beneath the trees were small flocks of Weavers (*Textor*) in company with Francolins and other birds.

"On Nov. 24 we left the southern Guaso Nyiro on our homeward journey, and crossing the Mau Escarpment, with its forests of juniper and grassy glades, we descended the escarpment at the southern end of beautiful Lake Naivasha, and followed the eastern shore to the railway-station. From here we entrained for Nairobi, where we arrived on Dec. 9. The packing and despatching of the specimens being completed, and having obtained a fresh supply of provisions, we left Nairobi for Nakuro on Dec. 16. Here Capt. Lambert joined our party. At Nakuro some delay was caused on account of quarantine and non-arrival of some goods, but we at last made a start for Baringo on Dec. 21, our final objective being Nimule on the White Nile. The party now consisted of Capt. Cozens, Capt. Lambert, Mr. Judd, and myself. By the aid of ox-wagons and a dozen porters, we reached Lake Hannington on Dec. 25, and transferred our baggage to camels which were in charge of eight armed Somalis. Two days later we arrived at the post of Baringo, a desolate spot; the lake, however, looked very interesting, and it is to be regretted that time did not allow us an opportunity of visiting it. Our camels being overloaded we succeeded with great difficulty in buying two more, as well as a couple of donkeys.

"On January 2 our party were safely over an escarpment, and two days later we crossed the Kerio River. The country had now become flat and dry, and to the west of us lay the Suk Hills. It was hereabouts that we passed quite close to a herd of some 200 elephants. We pushed on to the Weiwei River, the country being still dry and stony, dotted with small thorn bushes, and intersected by a few dry water-courses; along the banks might be seen an occasional Mongoose (*Helogale percivali*), or a Dik-Dik (*Rhynchotragus nasoguttatus*). N'gabotok, the last British outpost, was reached on Jan. 10, where we were cordially received by Capt. Booth, who very kindly found us a native guide and interpreter, besides giving us some additional much-needed water-bags. Following the Turkwel River, which near here disappears in the sandy river-bed, we crossed a dry and barren country covered with a few scattered bushes where birds were generally scarce, except Doves, which were very numerous; the Lesser Koodoo was also common. The Turkanos obtain water from wells in the bed of this river, and the shepherds carry, or rather drag after them, hooked sticks 30 ft. long to shake down seeds and leaves from the trees for their half-starved goats. Some unpleasantness with the natives made us glad, on Jan. 16, to leave this spot for the Kozibiri River. From now on we suffered for want of water—even digging in the white sandy river-bed was of no avail—and we were therefore not sorry on Jan. 20 to find a mineral spring much frequented by elephants: unfortunately, fly being discovered at 2400 ft., our hard-worked camels, which were already seriously diminishing in numbers, had to move on without their much-needed rest. We now ascended the Maroto Mts., and camped at 4000 ft. in a euphorbia-covered country. No water was to be had until Jan. 24, on which date a beautiful spring was discovered, and such game as Giraffe, Koodoo, and a new form of Duiker (*Cephalophus grimmia lutea*) were plentiful, whilst Guinea Fowls and other birds abounded. Here there were signs of cultivation by the Karamojans, who live in beehive-shaped huts, in almost inaccessible places. At this spring I had the pleasure of seeing at quite close quarters a pair of Verreaux's Eagles (*Aquila verreauxi*), which were hunting hyraxes along a perpendicular cliff, full of large but inaccessible caves. Meeting these birds at this place was of great interest, as in the 'Fauna of S. Africa,' vol. iii. 1903, p. 293, Stark and Sclater mention that "Verreaux's Eagle is found in the highlands of Shoa, and reappears in southern Africa, but has not hitherto been noticed between these distant points." On Jan. 28 we descended to 4400 ft., where a good stream of water flowed, and here we waited for our weary transport.

"From this camp Cozens and I climbed with difficulty a peak 8000 ft. high, and saw for the first time a Karamojan village. Baboons, Klipspringers (*Oreotragus o. schillingsi*), and Reedbuck were seen, though birds were scarce. However, a pair of Francolins (*Francolinus uluensis*) were found at 7500 ft., and a pair of Rock Chats (*Thamnolæa subrufipennis*) were secured. These hillsides were very stony, though grass was abundant; bushes somewhat resembling rhododendrons are found here, and mistletoe with yellow berries was noted, but the large trees were found chiefly along the streams at the bottom of the ravines.

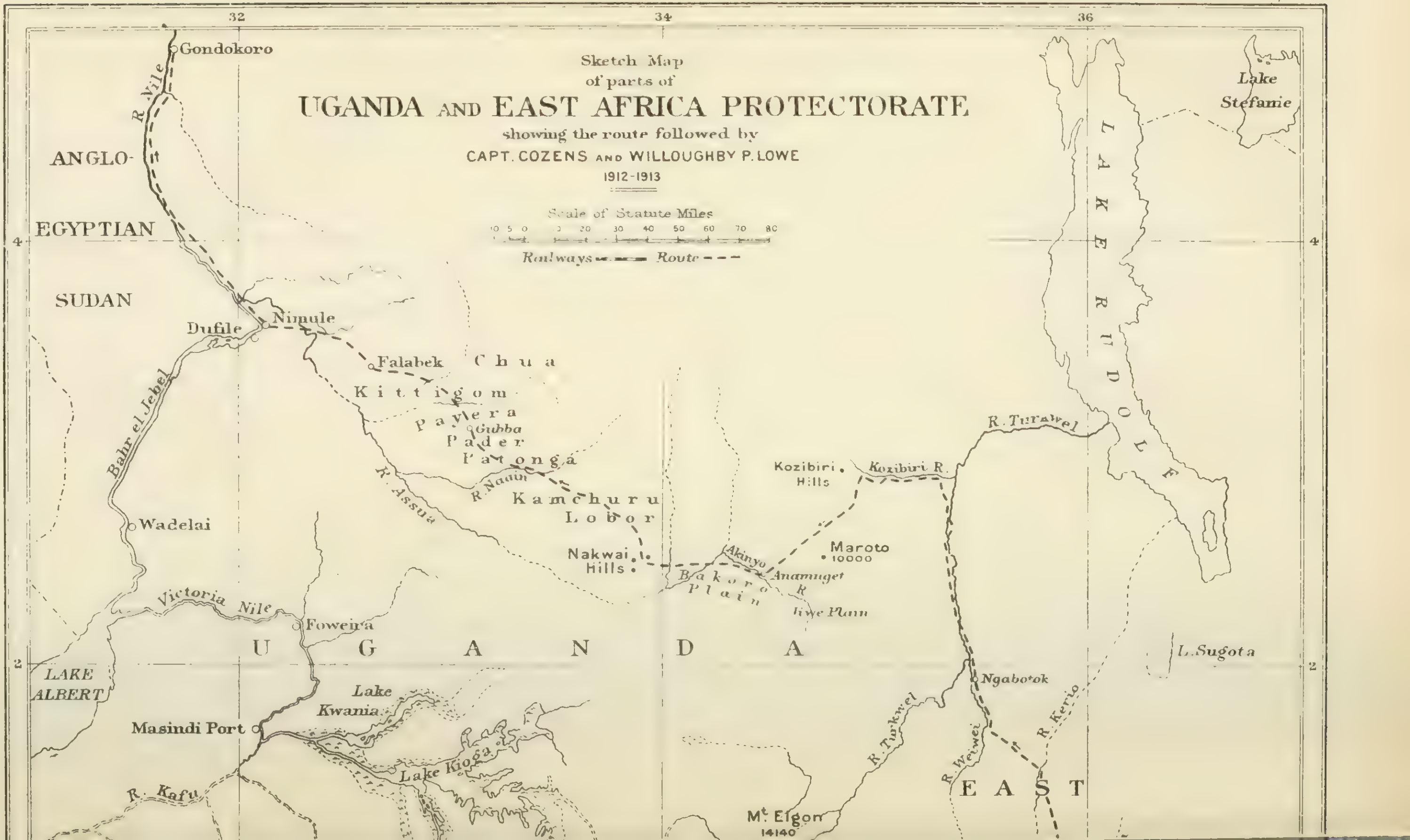
"At the end of January we left the Marotos for Annamuget and Bakoro, and on this road water could only be had by digging to a depth of 30 feet. The natives were now more friendly, and by Feb. 3 we had passed the Lobor Mts., and at an altitude of 3900 ft. we found water at eight feet below the surface. The Bakoro Plains are grassy and devoid of game, and only a few Larks, Bustards, and Ostriches were seen. The surrounding mountains are shaped like mole-hills. We passed along the north-east slope of the Nakwai Hills on Feb. 8, where the country is fairly level and bushy; on these hills I first met with White-headed Barbets. We had the misfortune to lose three more camels on this trek. The next day we departed for Kamchuru, which lies at an altitude of 3250 ft. in a well-wooded and fertile country, where we were glad to spend some days resting. To this point our loss of transport animals had been great, compelling us to abandon everything but necessaries. Passing through thickly wooded country, we pressed on for Kittigom, a new, pretty, and healthy outpost of the King's African Rifles; on reaching there we found all the officers were away. We therefore sent a runner to Nimule to try and get porters, and were lucky enough to find ten men on the spot. Once more getting on the move, Feb. 23 saw us at Falabek, 2300 ft. above sea-level, and on the 25th we crossed the Assua River. The temperature now rose to 108° in the shade, and we were not sorry to reach Nimule the following day. Here we succeeded in getting some fresh porters, and, parting with the few camels that had survived, we pushed rapidly on, travelling chiefly at night, and reached Gondokoro on Mar. 5. The packing of our specimens, which now totalled over 1200 birds and 227 mammals, besides reptiles and insects, took some days. Travelling viâ Cairo and Port Said, we landed in England after nearly seven and a half months' absence, during which time not one of us had had a day's illness."

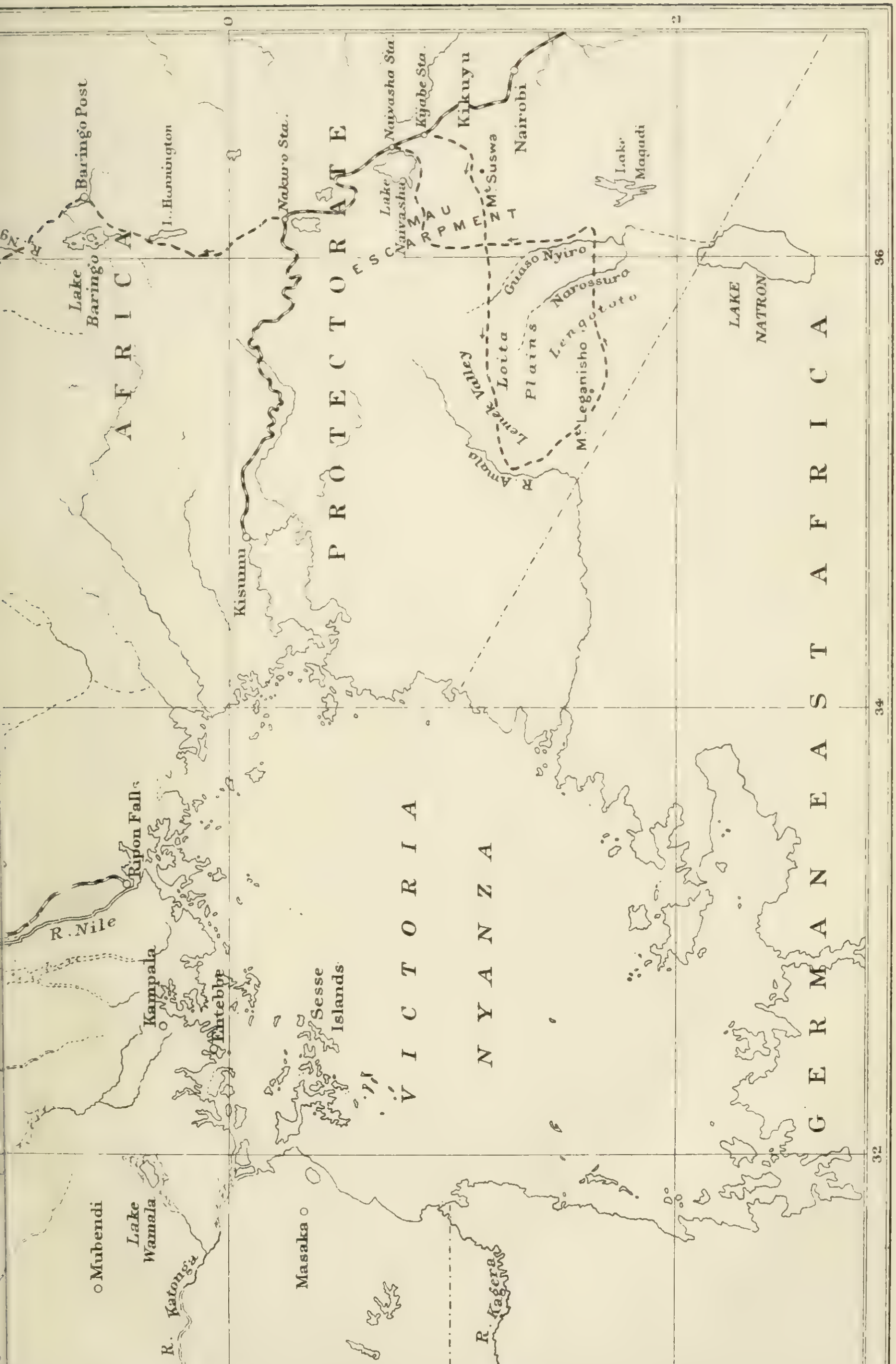
Itinerary of the Expedition.

The following is a dated itinerary showing the various localities at which birds were collected, all of which will be found in the map (Pl. I.) :—

First journey from Kijabe Station, west and south to the German border, and east-north-east to Naivasha Station.

Sept. 21–23, 1912.	Kikuyu.	Naivasha Dist., Bt. E. Afr.
„ 24.	Kijabe.	
„ 25–27.	Mt. Suswa.	
„ 28–30.	Mau Escarpment.	
Oct. 1–2.	Southern Guaso Nyiro.	Nyanza Dist., Bt. E. Afr.
„ 3–5.	Loita Plains.	
„ 6–8.	Lemek Valley.	
„ 9–25.	Amala River.	
„ 25–28.	12 miles E. of Amala River.	
„ 28–29.	West of Mt. Leganisho.	
„ 30–31.	Near Mt. Leganisho.	
„ 31–Nov. 1.	East of Mt. Leganisho.	
Nov. 1–6.	Narossura Plateau.	
„ 7–12.	Lengototo.	
„ 12–21.	Narossura River.	
„ 22–25.	Southern Guaso Nyiro.	
„ 26–29.	Loita Plains.	
„ 30–Dec. 2.	Foot of Mau Escarpment	Naivasha Dist., Bt. E. Afr.
Dec. 3–6.	Lake Naivasha and Naivasha.	
„ 12.	Lake Naivasha.	


Sketch Map
of parts of
UGANDA AND EAST AFRICA PROTECTORATE
showing the route followed by
CAPT. COZENS AND WILLOUGHBY P. LOWE
1912-1913
Scale of Statute Miles
10 5 0 10 20 30 40 50 60 70 80
Railways
Route
32
34
36
4
2
Gondokoro
R. Nile
ANGLO-
EGYPTIAN
SUDAN
Nimule
Dufile
Bahr el Jebel
Wadelai
Falabek
Chua
Kittigom
Paylera
Gubba
Pader
Patonga
R. Naam
R. Assua
Kamchuru
Lobor
Nakwai Hills
Akinyo
Anamuget R.
Bakoro Plain
Maroto
10000
Kozibiri Hills
Kozibiri R.
R. Turawel
LAKE RUDOLF
Lake Stefanie
L. Sugota
Ngabotok
R. Kerio
R. Weiwei
R. Turkwel
Mt. Elgon
14140
Victoria Nile
Foweira
UGANDA
LAKE ALBERT
Lake Kwania
Masindi Port
Lake Kioga
R. Kafu
EAST


Baringo Post
Lake Baringo
L. Hannington
A F R I C A
Nakuro Sta.
Naivasha Sta.
Kijabe Sta.
Kikuyu
Nairobi
Lake Naivasha
Mt. Suswa
Lake Magadi
M A U
E S C A R P M E N T
P R O T E C T O R A T E
Guaso Nyiro
Narossuro
Lengototo
Loita Plains
Lemek Valley
Mt. Leganisho
R. Amala
LAKE NATRON
G E R M A N E A S T A F R I C A
Kisumu
Ripon Falls
R. Nile
Kampala
Entebbe
Sesse Islands
V I C T O R I A
N Y A N Z A
Mubendi
Lake Wamala
R. Katonga
Masaka
R. Kagera
0
2
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Second journey from Nakuro Station through the Rift Valley and north-west to Gondokoro on the White Nile.

Dec.	21, 1912.	Nakuro.	Naivasha Dist., Bt. E. Afr.
,,	22–24.	Baringo Road, 20, 40, and 50 miles north of Nakuro.	
,,	25.	Lake Hannington.	
,,	26.	15 miles south of Baringo.	
,,	27–28.	Baringo Post.	
,,	29–30.	7, 12, 16, and 30 miles N.W. of Baringo Post.	
,,	31.	Nginyan River.	
Jan.	1, 1913.	40 miles N.W. of Baringo Post.	
,,	2.	Kito, 60 miles N.W. of Baringo Post.	
,,	3.	70 miles N.W. of Baringo Post.	
,,	4–5.	Kerio River.	
,,	5.	10 miles N.W. of Kerio River.	
,,	6–9.	Weiwei River.	
,,	10.	N'gabotok, Turkwel River.	
,,	11–16.	Turkwel River.	Eastern Province, Uganda.
,,	16–21.	Kozibiri River.	
,,	22.	Kozibiri Hills.	
,,	23.	Hills 10 miles N. of Maroto.	
,,	24–30.	Mt. Maroto.	
,,	30–31.	Jiwe Plains, 10 miles S.W. of Mt. Maroto.	
Feb.	1–4.	Annamuget and Akinyo River, Bakoro Plain.	
,,	5–9.	Nakwai Hills.	
,,	9–14.	Kamchuru, Lobor.	Northern Province, Uganda.
,,	15–17.	River Naam, Patonga Dist.	
,,	17–19.	Gubba, Pader Dist.	
,,	19.	Payera Dist.	
,,	20–21.	Kittigom, Chua Dist.	
,,	22–24.	Falabek.	
,,	25.	Assua River.	
,,	26.	20 miles E. of Nimule.	
March	1.	50 miles S. of Gondokoro.	
,,	2.	40 ,, ,,	
,,	3.	30 ,, ,,	
,,	5–7.	Gondokoro.	

SYSTEMATIC LIST.

1. **Struthio massaicus.** Masailand Ostrich.

Struthio massaicus Neumann, J. f. O. 1898, p. 243: Ukamba, B.E.A.

One egg taken at Loita, on the 5th October, probably belongs to this species.

2. **Francolinus coqui hubbardi.** Hubbard's Francolin.

Francolinus hubbardi O.-Grant, Bull. B. O. C. iv. 1895, p. xxvii: Nassa, shores of Speke Bay, S.E. Victoria Nyanza, G.E.A.

a. ♀ ad. Kijabe, 6300 ft. Sept. 24.
b, c. ♂ ad. & juv. Mt. Suswa. Sept. 27.
d. ♀ ad. Amala River. Oct. 12.
e. ♂ ad. Lengototo, 6000 ft. Nov. 10.

All are in worn plumage: one September and the October bird are moulting slightly.

The young male does not differ greatly from the adult; there are some black markings on the buff of the neck; the barring of the chest is rather narrower; and the spurs are mere knobs.

Total length in flesh: ♂ 12–12¼ inches; ♀ 11¼–12 inches. Wing: ♂ 147–148 mm.; ♀ 139–144 mm.

[♂ ♀. Irides brown; bill black, lower basal portion yellow; legs and toes yellow or rich yellow. Very common and lies very close in bush country.]

3. **Francolinus sephæna grantii.** Capt. Grant's Francolin.

Francolinus grantii Hartlaub, P. Z. S. 1865, p. 665; Unyamuezi, G.E.A.

a, b, c. ♂ ♀ ad. S. Guaso Nyiro, 2900 ft. Nov. 22 & 23.
d. ♂ ad. Rift Valley, 20 miles S. of Baringo, 3800 ft. Dec. 24.
e. ♂ ad. Mt. Maroto, Maroto Stream, 3700 ft. Jan. 26.

The three November birds are in quite good plumage, and the female is moulting slightly. Both the December and January birds are somewhat worn.

Total length in flesh: ♂ 12–12½ & 13 inches; ♀ 11½ inches. Wing: ♂ 144–141 mm.; ♀ 136 mm.

[Irides brown; bill black; legs and toes red. Abundant wherever found; occasionally perches in trees; very noisy.]

In naming these birds I have had to examine the series in the National Collection, and have come to the following conclusions in regard to the named races:—

FRANCOLINUS SEPHÆNA SEPHÆNA.

Perdix sephæna Smith, Rep. Exp. Cent. Africa, 1836, p. 55: Marikwa, *i. e.* Marico River, Transvaal.

A large race, having the chestnut spots of the lower neck extending to the chest; no chestnut streaks on rest of underparts. Wing: ♂ 175–162; ♀ 159–148 mm. One male from Coguno, Imhambane, Portuguese E. Africa, has the wing only 160 mm.

Range: Bechuanaland, Lake Ngami, Transvaal, Rhodesia, and Portuguese E. Africa (Imhambane Dist.).

FRANCOLINUS SEPHÆNA GRANTII.

Francolinus grantii Hartl. P.Z.S. 1865, p. 665, pl. 39. fig. 1 (top figure): Unyamuezi, G. E. Africa.

Of this I consider *F. rovuma* (♂) Gray (List Gall. B. M. Mar. 6, 1867, p. 52: East Africa), *F. ochrogaster* Hartl. (J. f. O. 1882, p. 327: Upper Nile), wing given as 148 mm., *F. g. delutescens* Mearns (Misc. Coll. Smiths. Inst. Washington, vol. 56, no. 20, 1911, p. 3: base of Mt. Kenia), wing given as 146 mm. and said to be rather larger than either *F. grantii* or *F ochrogaster*, and *F. s. jubaensis* Zedl. (Orn. Monatsb. 1913, p. 59: Afgoi, Jubaland), wing given as 146–136 mm. in ♂, and 143–132 in ♀, to be synonyms.

A small race, having the chestnut spots confined to the lower neck. Wing: G. E. Africa, ♂ 146–143, ♀ 140–135 mm., type given as 139 mm.; B.E. Africa, ♂ 150–139, ♀ 143–140 mm.; Uganda, ♂ 145–142, juv. 139–133, ♀ 139–133, juv. 132 mm.; Lado, ♂ 146, ♀ 135–134 mm.

Range: G. E. Africa, B. E. Africa, Uganda, and Lado; coast specimens from Melinda and Lamu, B.E.A.

FRANCOLINUS SEPHÆNA ICTEROPUS.

Francolinus icteropus Heugl. Sitzb. Ak. Wien, vol. xix, 1856, p. 303: Simehu, N. Abyssinia, *nom. nud.*; J. f. O. 1862, p. 412, 1st descrip.: wing given as 4·9″=125 mm.; id. Orn. N. O.-Afr. vol. iii. 1873, p. 885: wing given as 5″ 10‴=150 mm., and mentions that the original type, a female, is in Vienna; see also Hartl. P. Z. S. 1865, p. 666, pl. 39. fig. 2 (lower figure) from a drawing by Heuglin. Of this I consider *F. spilogaster* Salvad. (Ann. Mus. Civ. Gen. vol. vi. 1888, p. 541: Harar, E. Abyssinia), wing given as 170 mm., and *F. schoanus* Heugl. (Orn. N. O.-Afr. iii. 1873, p. 891: Shoa, C. Abyssinia) must become synonyms.

F. icteropus Heugl. has always been placed under the synonymy of *F. erckeli*, but a careful examination of the description and of the measurements given, and especially of the plate in the P. Z. S. 1865, of which Heuglin himself says: "The drawing was made from the freshly killed bird, several specimens of *F. erckeli* and *F. gutturalis* being near me at the time," convinces me that it is an excellent representation of a female of the striped bellied form of the "*sephæna*" group of Francolins.

A rather large race, having the wing in Abyssinian specimens: ♂ 154–147, ♀ 149–146 mm.: Somali: ♂ 160–150 mm.

Range: Abyssinia and Somaliland.

I have now only two other names to deal with: *F. rovuma* (♀ part) Gray (List Gall. B. M. 1867, published Mar. 6, p. 52: Rovuma River, P.E.A.–G.E.A. border), which preoccupies the *F. kirkii* Hartl. (P. Z. S. Nov. 14, 1867, p. 827: Zanzibar).

F. rovuma of Gray, although founded on two different birds, must go to the Rovuma River specimen by tautonymy, and the type, which is in the British Museum and is not sexed, is a bird with a striped belly. It is specimen "*a*" of Gray's List.

Hartlaub described his *F. kirkii* from a mutilated specimen, and gave as one character the "arrow-shaped black spots of upper tail-coverts," which points to an immature female, as does the wing-measurement of 5″.

Herr Herman Grote, in the Orn. Monatsb. 1913, p. 73, speaking for German East Africa, says that at Mikindani (which is on the coast a few miles north of the Rovuma River) he has taken some fifty of these Francolins, and all have been the form with the striped belly.

This "striped-bellied" form appears to occur principally along or near the coast, and where it occurs it agrees in wing-measurements with the inland "plain-bellied" form, *i. e.*: Beira, ♂ 153; Ruo River, Shiré, ♂ 146; Rovuma River, ♀ 137; Dar-es-Salaam, ♂ 149, ♀ 140; Kitwi, Ukamba, ♀ 140; Tana River, ♂ 148–140, ♀ 141–134 mm.; all these agree with the measurements of *F. s. grantii*. And Somali specimens, ♂ 165–155, ♀ 152–149 mm., agree with the measurements of the Abyssinian "plain-bellied" form. Thus it would appear that *F. s. sephæna* has no striped belly (coastal) form, but that both the east African and the Abyssinian forms have: the former, *F. s. grantii*, would have a coastal form under the name of *F. s. rovuma*, which occurs as far south as Beira, and the latter, which must bear the name of *F. s. schoanus*, would have a coastal form under the name of *F. s. icteropus*.

However, many more specimens are required before any definite conclusion can be come to, and I must remark that I have not seen specimens from Zanzibar, the type locality of *F. s. kirkii*, which may or may not be a separable race confined to the island.

4. **Francolinus uluensis.** The Machakos Francolin.

Francolinus uluensis O.-Grant, Ibis, 1892, p. 44: Machakos, Ulu, B.E.A.

a. ♂ ad. Lemek Valley, 6600 ft. Oct. 6.

b, c. ♂ ♀ ad. Lengototo, 6000 ft. Nov. 7.

All are somewhat worn and faded, and are therefore paler than some in the Museum collection.

Total length in flesh: ♂ 14¼ & 13¾ inches; ♀ 13½ inches. Wing: ♂ 170 & 160 mm.; ♀ 161 mm.

[Irides brown; bill dark brown, basal half of lower mandible yellow; legs and toes dirty yellow or light yellowish brown. Common on dry stony ground; very noisy in the evenings.]

5. **Francolinus kikuyuensis.** The Kikuyu Francolin.

F. kikuyuensis O.-Grant, Bull. B. O. C. vi. 1897, p. xxiii: Kikuyu Dist., B.E.A.

a. ♂ juv. Mau, 9100 ft. Dec. 2.

Total length in flesh: $14\frac{1}{2}$ inches. Wing: 166 mm.

This is a young bird in first dress, and is just starting to assume the adult plumage. It differs from the adult in the narrower striping of the upper parts, the barring at the ends of the primaries (which are pointed as in all young birds of the partridge type), the barring of the outer tail-feathers, and the more barred appearance of the underparts. The new feathers appearing on the neck and throat partake of the dark buffiness of the adult. It differs from a young bird of *F. mulemæ* O.-Grant (Bull. B. O. C. xiv. 1903, p. 30: Mulema, Uganda), obtained at the type locality, in being more narrowly streaked above and more finely barred below.

In the young of *F. shelleyi* O.-Grant (Ibis, 1890, p. 348: Natal), to which at first this bird appears similar, the ends of the primaries are wholly ashy, as in the adult.

[Irides brown; bill, upper mandible brownish horn, lower dirty yellow; legs and toes dirty yellow. This single young specimen was shot from a covey of five, which was put up in a patch of long grass, bordered by junipers.]

6. **Francolinus clappertoni gedgei.** Gedge's Francolin.

Francolinus gedgei O.-Grant, Ibis, 1891, p. 124: Elgon plains, B.E.A.

a. ♂ ad. Nakwai Hills, 3500 ft. Feb. 7.

b–d. ♂ ♀ ad. Kamchuru, Lobor, 3250 ft. Feb. 10–14.

These specimens agree perfectly with the type. One or two are showing signs of wear and all are moulting slightly.

Total length in flesh: ♂ $15\frac{1}{2}$–$16\frac{1}{2}$ inches; ♀ $14\frac{1}{4}$ inches.

Wing: ♂ 195–196 mm.; ♀ 180–181 mm.

The range of this subspecies seems to be from Lake Victoria to about the border of Uganda and the Sudan, where it is replaced by *F. c. heuglini* Neum. (Orn. Monatsb. 1907, p. 199: Meschr el Rek, Bahr el Ghazal), which is quite a good subspecies and extends northwards to at least Fashoda on the Nile.

From Kordofan westwards to Lake Chad, the true *F. c. clappertoni* Childr. (in Denh. & Clapp. Trav. App. 1826, p. 198 : Bornu, near Lake Chad), takes its place.

As might be supposed, where these subspecies overlap specimens bear the characters of both, and this is well exemplified in a bird from Goz-abu-Gumar, on the White Nile, about a third of the way between Kaka and Khartoum, which has the back of *F. c. clappertoni* and the underparts of *F. c. heuglini.*

In the Misc. Coll. Smiths. Inst. Washington, vol. 56. no. 20, 1911, p. 3, Mearns has described a new Francolin under the name *Francolinus grisescens*, and gives the type locality as Lokko Zegga. Uganda. It is allied to *F. clappertoni*, but I am quite unable to place it from the description, and should not be surprised to learn that it is similar to *F. c. gedgei.*

[♂ ♀. Irides brown, bare skin red ; bill black, reddish at base (one male is also very red on the nostrils) ; legs and toes red, darker in front. Not abundant, only small coveys seen in millet fields.]

7. **Francolinus icterorhynchus emini.** Emin's Francolin.

Francolinus icterorhynchus emini Neumann, Orn. Monatsb. 1907, p. 198 : West of Albert Nyanza.

a. ♂ ad. Falabek, 2800 ft. Feb. 23.

In slight moult.

Total length in flesh : 15½ inches. Wing : 178 mm.

Males in the Museum collection from Tingasi, near the Welle River, measure 174 and 176 mm. in the wing, others from Uganda have the wing 175–187 mm., and one from Ruwenzori is 180 mm. Two females from Uganda have the wing 180 and 183 mm.

Four specimens of the true *F. i. icterorhynchus* Heugl. (J. f. O. 1863, p. 275 : Bongo, Bahr el Ghazal), in the Boyd Alexander collection, have the wing in two males 162 and 166, and in two females 159 and 167 mm.

The birds from Uganda are rather longer in the wing than those from the type-locality, but as some intergrade with the western birds, it simply shows that *F. i. emini* is quite a good subspecies, and that the range of wing-measurements is from 174–187 mm., as against 162–167 mm. in *F. i. icterorhynchus.*

[Irides brown, eyelids yellow, bare skin behind eye yellow ; bill black, yellow at base ; legs and toes dusky orange. Found in long grass in well wooded country.]

8. **Francolinus hildebrandti altumi.** Altum's Francolin. (Plate II.)

Francolinus altumi Fisch. & Rchw. J. f. O. 1884, p. 179, pl. ii. : Lake Naiwasha, B.E.A.

a. ♂ ad. Mt. Suswa. Sept. 26.
b. ♂ juv. Lemek Valley, 6500 ft. Oct. 7.
c. ♂ ad. E. of Mt. Leganisho, 6600 ft. Oct. 31.

The October adult is rather paler above (owing to fading) and more worn than the September one.

[*Adult* : Irides brown ; bill black, lower and base of upper mandible orange ; legs and toes red, claws horn.

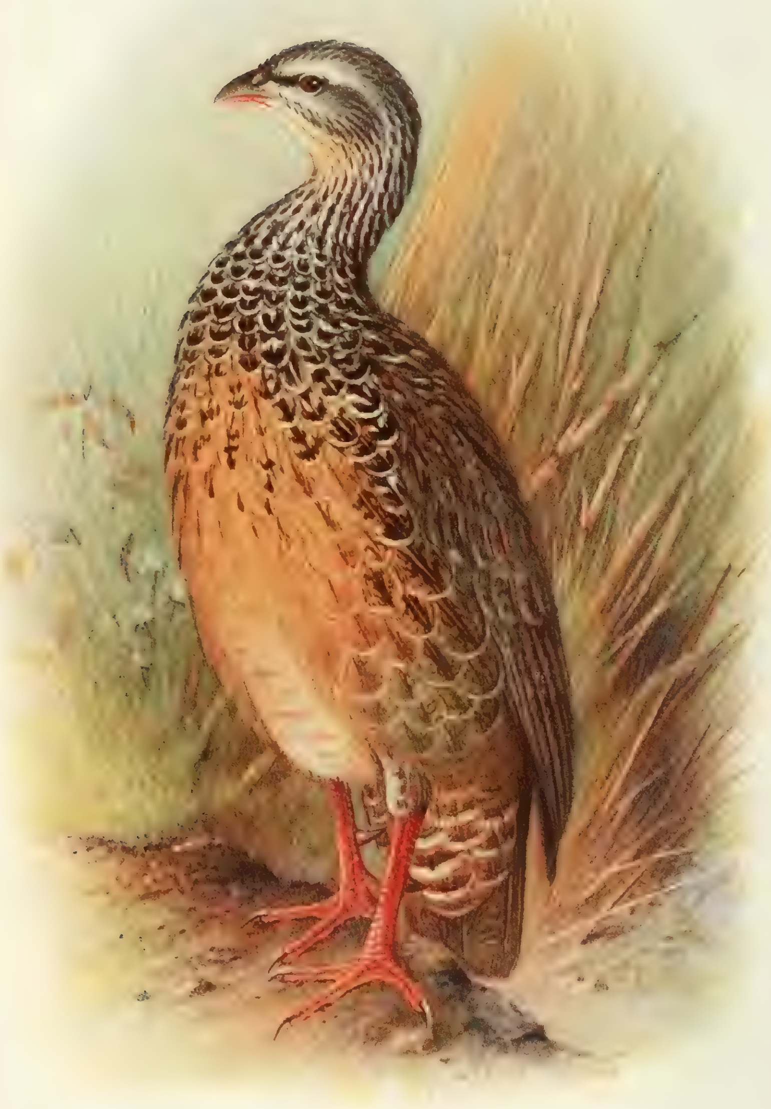
Juv. : Irides brown ; bill horn, base of lower mandible light horn ; legs and toes red.]

Total length in flesh : Ad. 15 inches. Weight 1 lb. Wing : 189 and 198 mm. Total length in flesh : Juv. 13¾ inches. Wing : 163 mm.

The young bird is apparently in first dress, and below is more the colour of the female, with the spotted appearance of the adult carried throughout, but mostly of a more brownish black, less apparent on the breast and abdomen. Above it is rather paler than the adult, is mottled with black, and has no spurs. It is generally much darker than a young male from Nyasaland.

There are in the Museum collection two adult males and three adult females, taken in British East Africa at Gilgil River, Morendat River, and Lake Elmenteita, and in the Jackson collection two adult males from Elmenteita and

Ibis. 1915. Pl. II.



FRANCOLINUS HILDEBRANDTI ALTUMI. ♀

[illegible]

Naivasha, and one young female from southern Sotik, all of which fall into this subspecies.

Fischer & Reichenow's plate of the male, if carefully compared with birds from British East Africa and German East Africa, is found to agree more with the birds from the former country and might have been taken from the specimen collected by Lord Delamere at the Morendat River, Naivasha Dist., on December 27, 1899.

The female now figured (Plate II.) is a specimen in the British Museum collected by Lord Delamere, at the same place and on the same date.

On the average, the male is rather darker above (less rufous), and more white (less buff) than males of either *F. h. hildebrandti* or *F. h. johnstoni* ; also there is some difference in the spotting and streaking of the under parts, especially of the flank feathers.

It is, however, with the female that the most striking differences occur, and as I cannot find any description of it, I give the following :—

Adult female of *F. h. altumi*. Above similar to adult male ; considerably greyer on the top of the head and nape than the females of *F. h. hildebrandti* or *F. h. johnstoni*. Sides of the head and throat whiter and greyer (much less buffy), and the former more distinctly streaked than females of the other two races. Below much paler, with the neck, chest and flanks very distinctly spotted and mottled with blackish, in contradistinction to the uniform cinnamon-brown of the females of the other two races.

There are, therefore, three distinct and well marked races of this Francolin as follows :—

F. H. HILDEBRANDTI Cab. J. f. O. 1878, p. 206, pl. iv. (of an adult female showing the clear neck and chest and light cheeks) : Zanzibar, Mombasa and further inland. Zanzibar apparently an incorrect locality.

Range. German East Africa. Specimens in the Museum collection from Kilimanjaro and Usari River.

F. H. ALTUMI Fisch. & Rchw.
Range. British East Africa.

F. H. JOHNSTONI Shelley, Ibis, 1894, p. 24: Milanji Hills.
Range. Nyasaland. Specimens in the British Museum collection from Nyasaland.

9. **Francolinus schuetti schuetti.** Schuett's Francolin.

Francolinus schuetti Cabanis, J. f. O. 1881, p. 351: Lunda, borders of Angola, and the Belgian Congo.

a. ♂ ad. Amala River, 5300 ft. Oct. 24.

Slightly worn and moulting.

Total length in flesh: 14¼ inches. Wing: 176 mm.

[Bill red; legs and toes red. Shot in dense bush near water.]

In naming this bird I have found it necessary to examine the whole of the specimens in the National Collection, and I cannot see more than two races of this Francolin, and therefore do not agree with Mearns (Misc. Coll. Smiths. Inst. Washington, vol. 56, nos. 14 & 20, 1911) that there are five races.

Besides the specimen above enumerated, there are in the Museum collection two birds from Chaya, Belgian Congo, four from Ruwenzori, and nine from Uganda; all of which fall in together and are indistinguishable both in size and colour.

Wing in ♂ 181–168 mm.; ♀ 163–156 mm.

Unfortunately I have not been able to examine birds actually from Lunda, but taking the two specimens from Belgian Congo as typical (and they agree well with the coloured plate, J. f. O. 1881, pl. ii.), there should be one race (*F. s. schuetti*) from the Congo basin across Uganda to the *west* of the Rift Valley and down the east side of Lake Victoria.

If, however, Lunda specimens should prove to be different, which I doubt, then *F. s. zappeyi* Mearns would range from the Congo divide to the Rift Valley.

Of the other race, the Museum possesses two from Mt. Kenia, two from Kikuyu, one from Nairobi, two from B. E. A. probably the Athi River (Drake-Brockman), and seven from

Kilimanjaro; all these are so close to each other, that I fail to see any distinguishing characters.

There appears, therefore, to be one race from Mt. Kenia southward along the east side of the Rift Valley to Kilimanjaro, which will bear the name of *F. s. maranensis* Mearns.

Wing: ♂ 186–166 mm.: ♀ 175–166 mm.

One of the two Drake-Brockman males measures 191 mm. in the wing, but this appears to be an exceptional bird.

With this race the males are on the average darker below than the females; but with the other race (*F. s. schuetti*) no difference is apparent in colour between the sexes.

The races and synonymy I admit at the present time are:—

FRANCOLINUS SCHUETTI SCHUETTI Cab.

Francolinus schuetti zappeyi Mearns (Misc. Coll. Smiths. Inst. Washington, vol. 56, no. 20, 1911: East shore of Lake Victoria) is a synonym.

FRANCOLINUS SCHUETTI MARANENSIS Mearns: Maranu, Mt. Kilimanjaro. Of this form I consider *F. s. kapitensis*: Athi River, B. E. A., and *F. s. keniensis*: Mt. Kenia, B. E. A., of Mearns (op. cit. no. 14, p. 2), as synonyms.

FRANCOLINUS SCHUETTI TETRAONINUS Blund. & Lovat, Bull. B. O. C. vol. x. 1899, p. 22: Mendi, Abyssinia.

This race, judging by the specimens before me, appears to be a good one, though a much larger series is required to make sure.

10. Francolinus jacksoni. Jackson's Francolin.

Francolinus jacksoni O.-Grant, Ibis, 1891, p. 123: Kikuyu, B.E.A.

a. ♂ ad. Mau, 9100 ft. Dec. 2.

In rather worn plumage.

Total length in flesh: 20¼ inches. Weight: 2½ lbs. Wing: 245 mm.

[Irides brown, eyelid red, bare skin behind eye yellow; bill red; legs and toes red, sides of tarsi blackish, spurs black. This species was only met with late in the evening, after crossing the Mau Escarpment. It appeared to be common on steep grassy slopes devoid of bush.]

11. Pternistes leucoscepus infuscatus. Cabanis' Bare-throated Francolin.

Pternistes infuscatus Cab. J. f. O. 1868. p. 413: Lake Jipe, British-German Border, S. of Kilimanjaro.

a. ♂ juv. Narossura, 6400 ft. Nov. 2.

b, *c.* ♂ ♀ ad. 12 miles N.W. of Baringo, 3000 ft. Dec. 29.

d. ♀ ad. Mt. Maroto, 3700 ft. Jan. 26.

All are in good plumage, and both the females are rather darker above than the adult male.

The young is apparently in first plumage, having the tail distinctly barred and dark mottlings on the inner secondaries and coverts (these parts being finely speckled in the adult); below, the markings are narrower, giving the young a much darker appearance than the adult. It has no spurs.

Total length in flesh: ♂ 19 inches; ♀ 15½ inches. Wing: ♂ 212 mm.; ♀ 197 & 193 mm. *Juv.* Total length in flesh: 16 inches. Wing: 201 mm.

[*Ad.* Irides brown; bill black, lower basal half orange; bare skin round eye and upper throat red, lower throat yellow.

Juv. Irides brown; bill black; bare skin round eye and throat red, lower neck yellow; legs and toes black.

Several coveys of about fifteen birds each were seen along the rivers: they were very shy and escaped by running.]

In naming these birds I have found it necessary to examine the whole group, and have come to the following conclusions:—

PTERNISTES LEUCOSCEPUS LEUCOSCEPUS (Gray, List Gallinæ Brit. Mus. 1867. p. 48, descr. nulla): Heuglin, Orn. N.O.-Africa, vol. iii. 1873, p. 899.

It appears that Heuglin's is the first description of this race, so that his name should stand as the author.

Gray, however, gives the locality as Abyssinia, and as Heuglin's description is based on Gray's name this locality can stand.

There are specimens in the British Museum from the Lebka Valley, Koomayli, Rairo, Sahati and Zoulla; all in Eritrea.

P. L. INFUSCATUS Cab. J. f. O. 1868, p. 413 (Reise Ost-Afrika, v. d. Decken, vol. iii. 1869, pl. xiv. p. 44): Lake Jipe, Anglo-German border, S. of Kilimanjaro.

P. l. kilimensis Mearns (Misc. Coll. Smiths. Inst. Wash. vol. 56, no. 20, 1911, p. 2: Kilimanjaro Region) is a synonym, inasmuch as the type locality of *P. l. infuscatus* is within the Kilimanjaro region: I can see no difference between birds from there and from through Brit. East Africa and Uganda to Mt. Maroto.

Range. From Mamboio north to Mt. Maroto, and near to Mt. Kenia.

P. L. MUHAMED-BEN-ABDULLAH Erl. Orn. Monatsb. vol. xii. 1904, p. 97: S. Somaliland (Lorian flats).

This is quite a good subspecies, having the underparts of *P. l. leucoscepus* and the upper parts of *P. l. infuscatus*.

Range. Somaliland.

P. L. HOLTEMULLERI Erl. op. cit. p. 98: S. Shoa.

No specimens examined.

P. L. KENIENSIS Mearns, op. cit. p. 1: west slope of Mt. Kenia.

In his description Mearns gives as diagnostic features: "in the absence of transverse bars on the wings and tail, which, instead of being *barred*, are minutely *speckled* and *vermiculated*." The italics are mine.

The barring of the wings and tail is a character of immaturity, while the speckling and vermiculations are features of the adult bird in every race. Consequently I see no valid reason on Mearns's data for separating this race, that worker having obviously confounded the young and the old birds.

Nevertheless the one specimen from the type-locality before me is certainly much more ochreous than any specimens of the other races, and therefore I have maintained the subspecies for the present.

One specimen of *P. l. infuscatus* from Kitwi, B.E.A., shot on Oct. 13, 1898, is very broadly marked, especially on the back, and approaches the true *P. l. leucoscepus* in this respect.

12. **Coturnix coturnix africana.** The African Quail.

Coturnix vulgaris africana Temm. & Schl. F. Jap. 1850, p. 103: "La pointe australe d'Afrique."

a. ♀ ad. Kikuyu. Sept. 22.

In clean dress and very little worn.

Total length in flesh: 8 inches. Wing: 109 mm.

[Irides light brown; bill brownish fawn; legs and toes flesh-colour. Very common.]

13. **Coturnix delegorguei.** Delegorgue's Quail.

Coturnix delegorguei Deleg. Voy. Afr. Austr. ii. 1847, p. 615: Oury River, *i. e.* Upper Limpopo, Transvaal.

a, b. ♂ ♀ ad. Amala River, 5500 ft. Oct. 11.

Both are rather worn and faded.

Total length in flesh: ♂ & ♀ 7 inches. Wing: ♂ 93 mm.; ♀ 98 mm.

[Irides brown; bill bluish horn, lighter in female; legs and toes flesh-colour. Probably more plentiful than it appears to be.]

14. **Ptilopachus fuscus florentiæ.** East African Grey Francolin.

Ptilopachys florentiæ O.-Grant, Bull. B. O. C. vol. x. 1900, p. cvii: Gessema Laikipia, B.E.A.

a. ♂ ad. Mt. Maroto, 6000 ft. Jan. 27.

b–d. ♂ ♀ ad. Nakwai Hills, 3800 ft. Feb. 6.

All are in good plumage and agree perfectly with the type.

The three males have the breast-patch distinctly more buffy (richer) than in the female, in which it is more stone-colour.

Total length in flesh: ♂ 11¾–11 inches: ♀ 11¾ inches. Wing: ♂ 122–129 mm.; ♀ 127 mm.

I do not think that *P. f. keniensis* Mearns (Misc. Coll. Smiths. Inst. Washington, vol. 56, no. 20, 1911: Mt. Kenia) can stand as a subspecies, as the differences given by Mearns between this race and *P. f. florentiæ* are the characters of the latter, especially the "nape and mantle without any chestnut whatever," which agrees perfectly with the type specimen of *P. f. florentiæ,* now before me.

[Irides brown; bill yellowish horn, base and nostrils red, black or brown stripe between nostrils; eyelids and bare skin red; legs and toes red.

A small covey of this Francolin was found in a dense thicket on a stony hillside on Mt. Maroto; they were shy and difficult to procure. In the Nakwai Hills they were more plentiful. They scale the steepest rocks with ease, and only take flight when forced.]

15. **Numida reichenowi.** Reichenow's Guinea-Fowl.

Numida reichenowi O.-Grant, Ibis, 1894, p. 535: Makarungu, Ukambani Dist., B.E.A.

a–d. ♂ ♀ ad. & juv. Loita, 6300 ft. Oct. 5.
e–g. ♂ juv. Amala River, 5500 ft. Oct. 10–11.
h–j. ♂ ♀ ad. & juv. Lengototo, 6000 ft. Nov. 8.

In the adults there are two males and two females, the former having distinctly longer helmets than the latter.

They are in quite good clean dress and only one, a November bird, is showing any signs of moult.

All the young are fully grown, and except for showing a somewhat browner tinge on the mantle and being on the average smaller spotted below, do not differ in plumage greatly from the adults, except that in all the helmet is small.

Three of the six are in moult, and appear to be assuming the clearer plumage of the adult.

Total length in flesh of adults: ♂ 24–24¼ inches; ♀ 22⅛–23½; the weight varies between 3 and 3¾ lbs.; some young only weigh 2½ lbs. Wing in adults: ♂ 298–299 mm.; ♀ 284–293 mm.

[*Adult.* ♂ ♀. Irides brown; bill greenish or reddish horn, lighter at tip; neck black, sides, around eyes, and upper throat bright blue, above eyes black; wattles and around nostrils red; top of head and helmet reddish horn, lighter at tip; feet black.

Young. Irides brown, bill black, tip light horn; wattles, top of head, and helmet black: neck bluish black; feet black: in rather older birds, the wattles and nostrils are red and the helmet blackish brown.

Common, and found in flocks of fifty or more. When disturbed they take to high trees, where they are easily shot.]

16. Numida ptilorhyncha major. Hartlaub's Tufted Guinea-Fowl.

Numida major Hartl. Abh. Bremen, vol. viii. 1883, p. 217: Wakkala, Uganda.

a–f. ♂ ♀ ad. Kozibiri River, 2400 ft. Jan. 21.
g. ♂ imm. Mt. Maroto, 3760 ft. Jan. 24.
h. ♂ ad. ,, ,, ,, 30. [Head only.]
i. ♂ ad. Bakoro, 25 miles E. of Lobor Mts. Feb. 3. [Head only.]
j. ♀ ad. Kittigom, Chua. Feb. 20. [Head only.]
k. ♂ ad. 40 miles S. of Gondokoro, 2000 ft. March 2.

Total length in flesh: ♂ 23–$23\frac{1}{2}$ inches; ♀ $21\frac{1}{4}$–$22\frac{3}{4}$ inches. Wing: ♂ 282–262 mm.; ♀ 270–267 mm. Weight: ♂ 3 lbs.; ♀ $2\frac{1}{2}$ lbs. Immature. Total length in flesh: 22 inches. Wing 259 mm.

All are in good plumage, and one or two are moulting.

The immature bird is not in first dress, and, except for the immature appearance of the head, might be an adult.

Some of the nasal tufts are quite equal in size to those of *N. p. ptilorhyncha* and *N. p. somaliensis*.

[*Adult.* Irides brown; bill, upper mandible red, tip and lower mandible light or yellowish horn; neck black or bluish black; wattles and stripe on neck blue; legs and toes dark brown.

Imm. Irides brown; bill dark brown, tip light horn; wattles and bare skin bluish flesh; helmet brown; legs and toes brown.

Found in flocks of twenty or thirty in dry bush country.]

17. **Numida ptilorhyncha rendilis.** Baringo Tufted Guinea-Fowl. (Text-figure 1, p. 28.)

Numida ptilorhyncha rendilis Lönnb. K. Sven. Vet.-Ak. Handl. 1911, p. 47: between the Mera and the Rendiles, B.E.A.

Numida ptilorhyncha baringoensis Claude Grant, Bull. B. O. C. vol. xxxiii. 1914, p. 141: 20 miles S. of Lake Baringo, Rift Valley.

a. ♀ juv. Baringo Road, 39 miles from Nakuro, 5200 ft. Dec. 22.

b, c. ♂ ad. 20 miles south of Baringo, 3800 ft. Dec. 24.

d, e. ♂ ad. 12 miles N.W. of ,, ,, ,, 29. [Heads only.]

f. ♂ ad. Turkwel River. Jan. ? [Head only.],

All are in quite good plumage, the young bird differing from the adults in being rather smaller spotted and having a distinct rusty wash throughout.

Total length in flesh: ad. $22\frac{3}{4}$ & 24 inches; juv. 21 inches. Wing: ad. 277 & 267 mm.; juv. 262 mm.

[*Ad.* Irides brown; bill reddish brown, lower mandible and tip of upper greenish horn: neck black, below eye and wattles blue; legs and toes black.

Juv. Irides brown; bill bluish horn, red at base; legs and toes blackish brown; neck blackish flesh, side-wattles and round eye blue, horn dirty reddish; nasal wattles reddish yellow.

Very abundant. Large flocks found in the evening scratching on the open plains and raising a cloud of dust.]

In working out these birds I came to the same conclusion about the Baringo Guinea-Fowl as has Lönnberg in his excellent resumé of the named races, but having unfortunately overlooked his description I redescribed his new race, and therefore my *N. p. baringoensis* becomes a synonym of his *N. p. rendilis.*

In this collection there are six specimens, in the Museum collection one, and in the Jackson collection two heads (from Kamassia), all from the Rift Valley, and all except the young bird have well-developed helmets approaching closely those of the *N. coronata* group.

The one adult female I have examined, a head from Kamassia, shows that the helmet is smaller than in the males, but is strongly and well formed, as opposed to the weakly formed helmet of its allies.

Even the young bird has the helmet far more developed than in young birds of its allies, in fact the helmet is equal in size to that of many adults of the other races.

The head from the Turkwel River undoubtedly belongs to this race, so that it is probable that it ranges somewhat into the country of *N. p. major*.

In naming this race I have had occasion to examine the whole of this group of Guinea-Fowls, and I have to thank Mr. Rothschild and Dr. Hartert for the loan of thirty specimens from Tring, which, combined with material in the National Museum, have given me a hundred specimens of this group for examination, and these from localities which cover the whole of its known range.

The races I am able to recognise are as follows:—

N. P. PTILORHYNCHA Less. Traité d'Orn. 1831, p. 498: founded on the specimen enumerated by Licht. Nom. Av. Mus. Zool. Berol. 1854, p. 86: Abyssinia. I designate Mareb River, N. Abyssinia.

This race is well-feathered up the back of the neck.

Wing: ♂ 272–250 mm.; ♀ 270–245 mm.

Range. Suakim south to N. Abyssinia.

Specimens examined from Sanafe: Araflé; Abu Amba; Koomayli; Rorat; Eritrea; Anseba Valley; Adarte, Mareb River, and Ghadi Saate in Habesch. 14 in all referable to this race.

NUMIDA PTILORHYNCHA MAJOR Hartl. Abh. Bremen, vol. viii. 1883, p. 217: Wakkala, Uganda.

N. p. macroceras Erl. Orn. Monatsb. 1904, p. 97: Lake Rudolf.

N. p. neumanni Erl. Orn. Monatsb. 1904, p. 97: Kwa Mlamba, Usogo, Uganda.

N. p. omoensis Neum. J. f. O. 1904, p. 407: Koscha, the valley of the Omo River and its tributaries.

N. p. toruensis Neum. J. f. O. 1904, p. 410: Mokia River, Toru.

All these appear to be synonyms. I have examined sixty-five specimens referable to *N. p. major*, including the types of *N. p. omoensis* and *N. p. toruensis*, and cannot find any characters that will distinguish these five races; so I have been compelled to place them all under *N. p. major*.

This race is similar in size and colour to *N. p. ptylorhyncha*, but is less feathered on the neck, and on the average has smaller face-wattles.

Wing: ♂ 285–255 mm.; ♀ 273–244 mm.

Range. West of Rift Valley to the Lakes and Ruwenzori; south to the German border, north to Kaka, White Nile, Ibago, Baro River, and Lake Suai.

Specimens examined from:—Kaka, White Nile; Gondokoro; Lake Suai, Lake Stephanie; Ibago, Baro River; Uma River E. of Lake Tata; Konso, nr. Lake Abaya; Koscha, nr. Omo River; Gelo, Lake Tata; Gofa, nr. Koscha; Abaya Lake; Male; Turkwel River; Kozibiri River; Mt. Maroto; N. Lobor; Mubinde, Unyoro; Butiaba, Unyoro; Toru; Chua; Semliki River; Usoga; Entebbe; Ruwenzori; Ankole; Buddu; Victoria Nile; Mabira Forest; Busoga; King's Lake, Kampala; Mt. Elgon; Kavirondo; Wero Tero.

NUMIDA PTYLORHYNCHA SOMALIENSIS Neum. Orn. Monatsb. 1899, p. 25: Somaliland (*Hawker*); *cf.* Ibis, 1899, p. 52, Hawker's trip to N.W. British Somaliland.

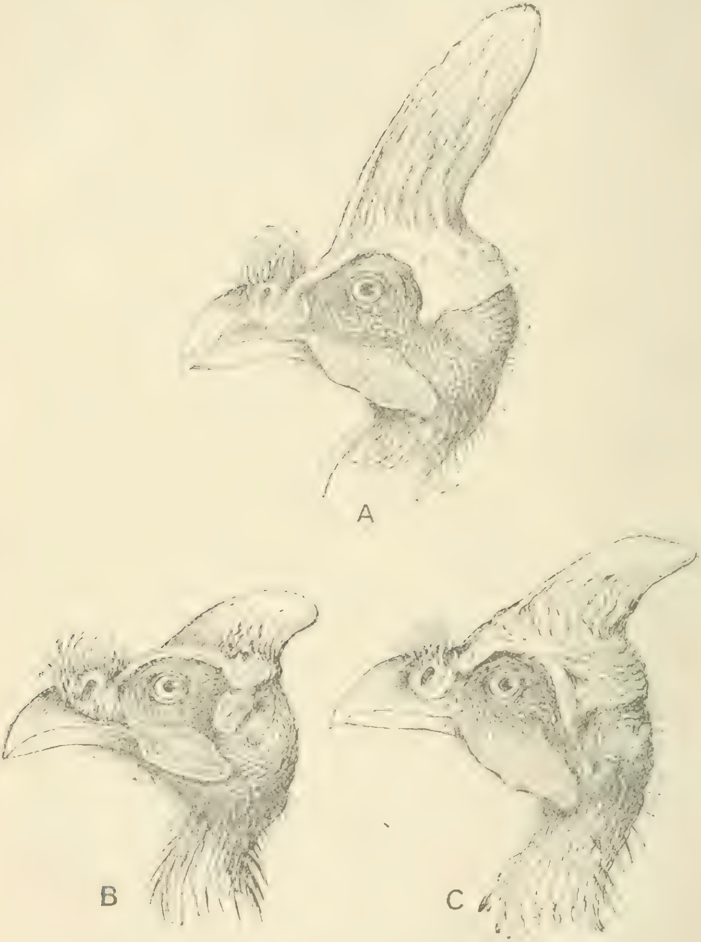
This race is quite distinct, having a *red* tip on the face-wattles, and is about equal in size and colour to the other races.

Wing: ♂ 286–274 mm.; ♀ 275–263 mm.

Range. Somaliland, Gallaland, and part of Jubaland to the Lorian Swamp. I have recently examined a specimen of this race in the collection of Col. Clarke shot at Loiola, north Kenia district, which agrees perfectly with true *N. p. somaliensis* and brings the range much further west.

Nine specimens examined from Waghar and Ogo, Somaliland; Kafra, Gallaland; and Wajheir, Jubaland.

Text-fig. 1.



Heads of Baringo Tufted Guinea-Fowl (*Numida ptilorhyncha rendilis* Lönnberg).

A. Largest specimen in the Museum collection.
B. Adult female from Kamassia, Rift Valley (Jackson collection).
C. Adult male from Rift Valley, type of *N. p. baringoensis* C. Grant.

NUMIDA PTILORHYNCHA RENDILIS Lönnberg. (Text-figure 1.)

Equal in size and colour to the other races, but having a distinctly larger helmet.

Wing: ♂ 267–265 mm.; ♀ juv. 262 mm.

Range. Throughout the Rift Valley to the lower Turkwel River, and eastwards to the Meru district.

Nine specimens examined.

This large series of the Tufted Guinea-Fowls show that no great reliance can be placed either on the nasal tuft, the size of the bird, or the colour of the plumage.

With the nasal tufts great variation occurs, and birds from Uganda have them quite as well developed as birds from north Abyssinia and *vice versa, i. e.* birds from north Abyssinia have quite as small ones as birds from the farthest south.

I at first thought that some stress could be laid on the colour of the tufts, but on receiving the series from Tring I found that birds from the same locality have both white and red tufts.

It is, however, worthy of notice that all the specimens so far seen of *N. p. somaliensis* have *white* and well developed tufts.

Why the nasal tufts are white in some specimens and red in others still needs explanation; it may be due to age, but does not appear to be due to season, as specimens killed in the same month and in the same district, have both white and red tufts.

For instance, one from Gofa has a reddish tuft, and one from Konso has a white tuft; both were taken in August, and instances again occur in February and May.

The supposed distinguishing character of *N. p. neumanni* is said to be a red tip to the face-wattles, but in all the specimens examined from the typical locality—♀. Mlamba (Usoga), wattles blue; ♀. Mtanda (Usoga), "wattles blue with a few brown specks along lower edge"—the wattles are invariably entirely blue, as in birds from the type locality of *N. p. major*.

In the Museum collection there are three specimens of this group from the Congo Valley, two from Tingasi and one from Poko, which, though in all respects similar to *N. p. major*, appear to have the face-wattles smaller and narrower, and less projected beyond the posterior attachment.

Four (two males and two females) in the Boyd Alexander collection, from the Lake Chad district, are similar to *N. p. major*, and do not bear out so well this character of the wattles.

Until, however, further material comes to hand to show whether or not this character is constant, I provisionally place them under *N. p. major*; though, should the Congo bird prove to be a distinct race, it would bear the name of *N. p. inermis* Dubois (Ann. Mus. Congo, i. 1905, p. 19: Upper Congo).

In the Orn. Monatsb. 1911, p. 82, Reichenow described a Guinea-Fowl of this group under the name of *Numida strasseni*, and gives the type-locality as "Duma am unteren Ubangi." It seems to me this will prove to be a synonym of *N. p. inermis*.

The male from Lake Stephanie has a distinctly longer helmet than other specimens of *N. p. major*, but is quite differently shaped to that of *N. p. rendilis*.

There is also one specimen of *N. p. somaliensis* from Wajheir that has the helmet exceptionally long, which is in shape like the bird from Lake Stephanie.

One specimen of *N. p. somaliensis* from Kafra shows little indication of the red tip of the wattles.

18. **Turnix lepurana.** Smith's Button-Quail.

Ortygis lepurana A. Smith, Rep. Exp. App. 1836, p. 55: "country north of Kurrichane," W. Transvaal.

a. ♂ ad. Mt. Suswa. Sept. 27.

In good dress and not worn.

Total length in flesh: 5¾ inches. Wing: 77 mm.

[Irides yellow; bill blue; culmen brown; legs and toes flesh-colour. Several seen.]

19. **Pteroclurus exustus ellioti.** Elliot's Sand-Grouse.

Pterocles ellioti Bogd. Bull. Ac. Sci. Pétersb. xxvii. no. 2, 1881, p. 167 : Abyssinia.

a. ♂ ad. Rift Valley, 30 miles N.W. of Baringo, 2800 ft. Dec. 29.

In good plumage and not worn. A rather pale specimen, very close to some Indian birds, but having richer coloured wing-coverts.

Total length in flesh : 12½ inches. Wing : 171 mm.

[Irides brown ; bill bluish white ; toes dirty grey. Several large flocks seen.]

In naming this bird I have had occasion to examine the whole series of the *exustus* group, which appear to comprise the following races :—

PTEROCLURUS EXUSTUS EXUSTUS Temm. Pl. Col. v. 1825, pls. 354, 360 : west coast of Africa, Senegal.

Egyptian specimens may be taken as typical, and these are large and dark in colour. Males dark above and white wing-spot distinct ; females dark and well marked.

Wing : ♂ (4 measured) 195–184 mm. ; ♀ (5 measured) 187–170 mm.

Range. Senegal to Egypt.

PTEROCLURUS EXUSTUS ELLIOTI Bogd. op. cit.

P. e. somalicus Hartert (Nov. Zool. 1900, p. 28 : Milmil, Somaliland) is a synonym.

Small, richer in coloration, especially on the greater wing-coverts. More white on the average on the tips of the 6th–10th primaries.

Wing : ♂ (12 measured) 181-171 mm. ; ♀ (10 measured) 175–165 mm.

Range. Abyssinia, Somaliland, B.E.A., west to Lake Chad.

Two males and three females from Kilimanjaro are much darker than normal specimens of *P. e. ellioti*, especially the females, but without further material I refrain from doing anything with them, especially as some males from

Somaliland are almost exactly similar to these Kilimanjaro males, and in between there are specimens from Brit. East Africa, that are much lighter in colour. They agree well with the description of *P. e. olivascens* Hartert (Orn. Monatsb. 1909, p. 183 : Campi-ya-Simba, Masailand).

PTEROCLURUS EXUSTUS ORIENTALIS Hart. Nov. Zool. 1900, p. 28 : India (no exact locality given).

Of the same size as *P. e. ellioti*. On the average less rich in colour, especially on the greater wing-coverts. Less white on the average on the tips of the 6th–10th primaries.

Wing : ♂ (33 measured) 187–167 mm. ; ♀ (37 measured) 179–161 mm.

Range. India generally.

A pair of birds from Arabia in the Museum collection appear to belong to this race, but these, if distinct, should be referred to *P. e. erlangeri* Neum. (Orn. Monatsb. 1909, p. 154 : El Hota, Lahadj, S. Arabia).

20. Pterocles decoratus decoratus. Decorated Sand-Grouse.

Pterocles decoratus Cab. J. f. O. 1868, p. 413 : Lake Jipe, Anglo-German boundary, *cf.* von der Decken Reise Orn-Afrika, iii. 1869, p. 43, pl. xiii.

a. ♂ ad. Southern Guaso Nyiro, 3100 ft. Nov. 23.

Showing signs of wear.

Total length in flesh : 10¼ inches. Wing : 166 mm.

[Irides yellow ; bill yellow ; feet yellow. Stomach contained seeds of a leguminous plant. A few of these birds were seen coming to drink at about 10 A.M. No others were observed.]

21. Pterocles lichtensteinii sukensis. Neumann's Sand-Grouse.

Pterocles lichtensteinii sukensis Neum. Orn. Monatsb. 1909, p. 153 : Turquel, Suk Country, B.E.A.

a, b. ♂ ♀ ad. & juv. Turkwel River, 1900 ft. Jan. 14.

c. ♂ ad. Kozibiri River, 2400 ft. Jan. 20.

All are in good plumage. The young female still retains the mottled sandy tips to the flight-feathers ; though in general colour it agrees perfectly with two adults in the Jackson collection from Lake Hannington.

The male from the Turkwel River is much richer in colour than the male from the Kozibiri River.

Total length in flesh : ♂ $11\frac{1}{4}$ & $11\frac{3}{4}$ inches ; ♀ 11 inches.

Wing : ♂ 189 & 172 mm. ; ♀ 182 mm.

The Kozibiri male is smaller in the wing than the other and is moulting, so that the paler colour is probably somewhat due to fading.

[♂. Irides brown, bare skin below eyes yellow, above eyes green ; bill yellowish brown (Kozibiri), reddish green (Turkwel) ; feet yellow or dull yellow (Kozibiri).

♀. Irides brown ; bare skin pale yellow ; bill black ; feet yellow.

When the natives had finished watering their live-stock, enormous flocks of this Sand-Grouse came to drink after dark in the wells in the river-bed. It was most interesting to watch this steady stream of birds entering and leaving these deep holes, and that there were no collisions was marvellous.]

In naming these birds I have had to examine all the available specimens of *P. lichtensteinii*, and have come to the following conclusions regarding the distribution and races :—

PTEROCLES LICHTENSTEINII LICHTENSTEINII Temm. Pl. Col. v. 1825, pls. 355, 361 : Nubia.

P. l. hyperythrus Erl. (J. f. O. 1905, p. 94, pl. iv. : Dana River, S. Somaliland) is a synonym.

Range. Coast of Red Sea, Eritrea, Abyssinia, Somaliland

Females rather richer sandy.

Wing : ♂ (9 measured) 175–186 mm. ; ♀ (6 measured) 169–186 mm.

PTEROCLES LICHTENSTEINII ARABICUS Neum. Orn. Monatsb., 1909, p. 152 : Lahadj, South Arabia.

Both sexes considerably paler (more stone-colour and markings above somewhat less broad) than in true *P. l. lichtensteinii*.

Range. Arabia, Muscat, and India west of the Indus.

Wing: Arabia, ♂ (7 measured) 174–189 mm.; ♀ (2 measured) 170–186 mm. Muscat, ♂ (1 measured) 170 mm. India, ♂ (2 measured) 171–176 mm; ♀ (2 measured) 167–172 mm.

PTEROCLES LICHTENSTEINII SUKENSIS Neum. op. cit.

Males rather darker above than in *P. l. lichtensteinii*; females considerably darker above and below, dark markings very broad, light markings much deeper in tone.

Range. Uganda and B.E.A.

Wing: ♂ (4 measured) 180–197 mm.; ♀ (2 measured) 177 mm.

Since writing the above I have been able to examine five males and four females of this race collected by A. Blayney Percival in British East Africa, which agree perfectly with the other specimens of this race, and which further show that the cross-barring on the belly of the males is much more defined and clear than in males of either *P. l. lichtensteinii* or *P. l. arabicus*.

The wings of these nine specimens measure: males 175–187 mm.; females 171–185 mm.

22. **Pterocles quadricinctus lowei.** Lowe's Four-banded Sand-Grouse.

Pterocles quadricinctus lowei Claude Grant, Bull. B. O. C. vol. xxxv. 1914, p. 19: Renk, White Nile.

a. ♂ juv. N.E. slope, Nakwai Hills, 3600 ft. Feb. 8.

b. ♀ ad. Kittigom, Chua, 2850 ft. Feb. 21.

Total length in flesh: ♀ 11½ inches. Wing: ♂ 186 mm.; ♀ 179 mm.

[♀. Irides brown; bare skin yellow; bill black, base yellowish; feet yellow. ♂. Feet yellow.

This Sand-Grouse was common.]

This subspecies differs from the true *P. q. quadricinctus* in its larger size, darker and broader markings of the upper surface, and generally richer tone throughout. On the crown the streaks are more clearly defined and broader, and the white markings on the forehead are perhaps slightly broader.

On comparing two young males, one from Senegal and the other from Uganda, the same differences are apparent; the eastern bird being considerably darker and broader in the markings of the upper surface and having more black on the belly: this latter may, however, be only individual.

Wing: ♂ (6 ad. measured) 183–201 mm.; ♀ (4 ad. measured) 177–187 mm.

Type. ♂ ad. Renk, White Nile. 12. v. 1901. R. M. Hawker Coll. in British Museum. Wing: 201 mm.

This is the east African form, and ranges down the Nile Valley to Uganda and B.E.A.

Named in honour of Mr. Willoughby P. Lowe.

There are therefore two races of this Sand-Grouse as follows:—

PTEROCLES QUADRICINCTUS QUADRICINCTUS Temm. Pig. et Gall. iii. 1815, pp. 252, 713: coast of Coromandel, *errore* = Senegal, W. Africa.

As there can be little doubt that this Sand-Grouse does not range across into India, the locality of Coromandel is incorrect. In the Pig. et Gall., p. 254, it will be found that Temminck based the locality of Coromandel on the authority of Sonnerat. Later, in the Pl. Col. v., under *P. lichtensteinii* he remarks:—" La preuve certaine que le Ganga quadrubande a été trouvé non seulement sur la côte de Coromandel, mais encore sur une grande étendue de côtes d'Afrique; j'en ai reçu plusieurs individus du Sénégal."

So that, as Temminck himself has given a locality in Africa for this species, the type locality in future should be designated as " Senegal, West Africa."

Paler, less broadly marked, more " bloom " above.

Wing: ♂ (5 measured) 173–185 mm.; ♀ (2 measured) 177–180 mm.

A young male from Senegal measures 179 mm. This is the only specimen available from the type locality.

Two adult females from Bahr-el-Ergig River, south of Ft. Lamy, Lake Chad district, appear to belong to the western race, agreeing well in colour and markings, though they have the wing 179 and 182 mm. respectively.

Range. West Africa, Senegal, Gambia, Serikin, Kudu, nr. Ibi, Benue River, and probably to Lake Chad.

PTEROCLES QUADRICINCTUS LOWEI C. Grant, op. cit.

Darker, more broadly marked, less "bloom" above.

Wing: ♂ (7 measured) 183–201 mm.; ♀ (4 measured) 177–187 mm. Two young males measure 187 and 176 mm. respectively.

Range. Nile Valley, Abyssinia, Uganda, B.E.A., and west to el Obeid, Kordofan.

23. **Vinago waalia.** Bruce's Fruit-Pigeon.

Columba waalia Gmelin, Bruce's Reisen in das Innern von Africa, 1791, p. 31: Tcherkin, nr. Lake Tsana, Abyssinia.

Gmelin does not give any defined locality, but in the 'Travels to discover the Source of the Nile,' vol. v. 1790, p. 186, Bruce tells us he discovered the Waalia on the road to Tcherkin. Therefore this place, which is just north of Lake Tsana, becomes the type locality.

a, b. ♂ ad. Kittigom, Chua Dist., 2850 ft. Feb. 20, 21.

Both are in good dress and not worn.

Total length in flesh: 12¾ & 13 inches. Wing: 170 & 178 mm.

[Irides blue and red; bill bluish white, dull red at base; feet yellow, claws grey. Very common.]

24. **Vinago calva salvadorii.** Salvadori's Bald-fronted Fruit-Pigeon.

Vinago calva salvadorii Dubois, P. Z. S. 1897, p. 784: Eastern and Central Tropical Africa.

a, b. ♂ ♀ ad. Amala River, 5400 & 5500 ft. Oct. 11 & 18.

c. ♀ ad. Mt. Maroto, Maroto Stream, 3700 ft. Jan. 20.

The female is duller and has less vinaceous on the wing than the male. Both are in good dress and the male is moulting. The female from Mt. Maroto is rather worn and darker than the other specimen.

Total length in flesh: ♂ 11½ inches; ♀ 12 & 11½ inches.

Wing: ♂ 167 mm.; ♀ 172 & 167 mm.

[Irides blue edged with red; bill greenish horn or bluish white, red at base; legs and toes red. In the female the bill is bluish white, basal half red.]

I have compared all the series in the Museum Collection, and cannot see any difference between *Columba calva* Temm. & Knip (Pig. i. 1811, p. 35, pl. vii.: coasts of Loango and Angola) and *V. nudirostris* Swainson ('Birds of Africa,' vol. ii. 1837, p. 205: Senegal, *cf.* p. 203), which therefore becomes a synonym.

Vinago calva sharpei Reichenow (Orn. Monatsb. 1902, p. 45: Oberguinea) is a pure synonym of *V. nudirostris* Swainson.

There is certainly some variation between the east and west coast birds, the eastern being perhaps rather brighter and rather larger than the west coast birds, and I have therefore maintained Dubois' "*salvadorii.*" Birds from both coasts almost lack the grey nuchal band, the conspicuousness or otherwise of which is probably due to age.

The range of the two races I recognise appears to be as follows:—

VINAGO CALVA CALVA Temm.

Senegal, Gambia, Sierra Leone, Liberia, Gold Coast Colony, Nigeria, Cameroons south to Angola east to Welle River and Upper Congo, Islands of Principe and Fernando Po, *cf.* Bannerman, Ibis, 1914, p. 629.

VINAGO CALVA SALVADORII Dubois.

German East Africa, British East Africa, Uganda, across Ruwenzori and the Semliki Valley into eastern Belgian Congo.

25. **Columba guinea longipennis.** East African Speckled Pigeon.

Columba guinea longipennis Reichw. Vög. Afr. i. 1901, p. 402: Ugogo, East Africa.

a. ♂ ad. 7 miles N.W. of Baringo, 3800 ft. Dec. 29.

b. ♂ ad. Mt. Maroto, Maroto Stream, 3700 ft. Jan. 24.

Both are in good clean plumage.

Total length in flesh: 14 & 14½ inches. Wing: 224 & 234 mm.

[Irides yellow, bordered exteriorly with red; bare skin round eyes red; bill dark brown or black, nostrils grey; legs and toes pinkish flesh. Tolerably common.]

In naming these birds I have examined the whole series in the National collection, and have come to the conclusion that there are only two races of *Columba guinea*. I have upheld *C. g. longipennis* Reichenow, as the east African birds are somewhat larger than the west African, though the differences are very slight.

Erlanger, in the J. f. O. 1905, p. 112, compares the Guinea Pigeons from eastern, western, and southern Africa, and finds that the eastern and southern specimens differ from the north-eastern and western in the darker grey coloration, and furthermore the lower back, rump, and upper tail-coverts are the same colour as the belly: he appears to place *C. g. longipennis* and *C. g. uhehensis* as synonyms of *C. g. phæonota*.

I fail to understand what he means, and cannot see any difference in this respect between the western and eastern birds; the south African race *C. g. phæonota* G. R. Gray (List B. Brit. Mus. pt. iv. 1856, p. 32: South Africa) is undoubtedly quite distinct.

The two races are as follows:—

Columba guinea guinea Linn.

Columba guinea Linn. Syst. Nat. 12th ed. i. 1766, p. 282: Guinea, *ex* Edwards.

On the average smaller. Wing-measurement: 231–212 mm.

Wing: Gambia, 231–218 mm. (not sexed). Gold Coast, ♂ 212 mm.; ♀ 220 mm. Niger, 222 mm. (not sexed).

Columba guinea longipennis Reichw.

On the average larger. Wing-measurement (both sexes): 245–214 mm.

Wing: Abyssinia, ♂ 245–228 mm., ♀ 237 mm.; Somali, 234 mm. (not sexed). Sudan, ♂ 219 mm. East Africa, ♂ 238–224 mm.: ♀ 230–214 mm. Kilimanjaro, ♂ 223 mm.:

227 mm., not sexed. Thus the males measure 245–219 mm. and the females 237–214 mm.

Of this race, *C. g. uhehensis* Reichw. (Orn. Monatsb. 1898, p. 82: Iringa in Uhehe), wing 220 mm., is a synonym.

26. **Columba arquatrix.** Speckled Wood-Pigeon.

Columba arquatrix Temm. & Knip, Pig. i. 1808–13, fam. seconde, p. 11, pl. v.: Anteniquoi = Outeniqua, Knysna, Cape Colony.

a. ♂ ad. Top of Mau Escarpment, 7200 ft. Sept. 29.

This bird agrees perfectly with specimens from the type locality and is in quite good dress.

Total length in flesh: 15¼ inches. Wing: 233 mm.

[Irides light brown; eyelids orange-yellow; bill yellow; legs and toes yellow. Very common amongst the thick forest-trees.]

27. **Turtur afra delicatula.** Blue-spotted Wood-Dove.

Chalcopelia delicatula Sharpe, Bull. B. O. C. xii. 1902, p. 84: Goz-abu-Gumar, White Nile.

a, b. ♂ ad. & imm. Gondokoro, 1800 ft. Mar. 5.

The adult agrees perfectly with the type.

The immature specimen still retains some of the buffy markings on the tips of the wing-feathers.

Total length in flesh: ad. 9 inches; imm. 8½ inches. Wing: 109 mm.

I agree with Mr. Sclater that there are three distinct races of the Blue-spotted Dove (*cf.* 'Ibis,' 1912, p. 35).

[Irides brown; bill black; legs and toes dull claret. Not observed until we reached Gondokoro.]

28. **Turtur chalcospilos.** Emerald-spotted Wood-Dove.

Columba chalcospilos Wagl. Syst. Av., Col. 1827, sp. 83: Senegal.

a. ♂ imm. E. of Mt. Leganisho, 6800 ft. Nov. 1.
b. ♀ ad. Southern Guaso Nyiro, 2900 ft. Nov. 24.
c. ♂ juv. Amala River, 5300 ft. Oct. 23.
d. ♀ ad. Weiwei River, 3000 ft. Jan. 9.

The adults are in good dress. The immature bird is in moult and still retains a few feathers of the young dress. The young bird is also starting to assume the adult plumage.

Total length in flesh: ♂ $8\frac{1}{2}$ & 8 inches; ♀ 8 & $7\frac{3}{4}$ inches. Wing: ♂ 113 & 107 mm.; ♀ 104 & 102 mm.

In naming these birds I have had to examine the whole series in the National Collection; and I agree with Mr. Sclater (*cf.* Ibis, 1912, p. 35) that there are no real distinguishing characters between eastern and western and southern specimens; at least in colour.

Measurements of the wing give the following results:—West Africa, ♂ 105–102 mm.: ♀ 99–98 mm. East Africa, ♂ 115–104 mm.; ♀ 111–102 mm. South Africa, ♂ 110–105 mm.; ♀ 109–106 mm.

Certainly the west African birds are rather smaller than east and south African specimens, and should perhaps be kept separate, though, as only four specimens are available, it is possible that with a larger series the measurement of 105 mm. would be exceeded.

The single female specimen from Lake Ngami has the wing 118 mm., though it corresponds in colour with the rest of the series.

The named races of this Dove are as follows:—

Turtur chalcospilos chalcospilos Wagl. Syst. Av., Col. sp. 83: Senegal.
,, ,, *erlangeri* Rchw. J. f. O. 1902, p. 134: Angola.
,, ,, *volkmanni* Rchw. J. f. O. 1902, p. 134: Damaraland.
,, ,, *caffra* Rchw. J. f. O. 1902, p. 134: S.E. Africa.
,, ,, *somalica* Erl. J. f. O. 1905, p. 134: South Somaliland.
,, ,, *acanthina* Oberh. P. U.S. N. M. 1905, p. 845: Mt. Kilimanjaro.

I agree with Oberholser that *T. c. erlangeri* is a synonym of *T. c. chalcospilos*.

If a much larger series should show that west African birds are persistently smaller and Somaliland birds persistently larger, then three races might be recognised as follows:—

T. c. chalcospilos. West Africa.

T. c. volkmanni. Damaraland, east to Lake Ngami.

T. c. caffra. South, central, east, and north-east Africa.

As regards the value of the names *C. afra* and *C. chalcospilos*, there is no doubt both are founded on the *Turtur senegalensis* of Brisson (Orn. vol. i. 1760, p. 122); this name, however, cannot be used, as it is merely a latinisation of the French name and was not binomial. Brisson describes the colour of the spots as "viridi-aureæ splendentes in violaceum mutantes sicut in collo Anatino": in other words, the green spotted form. Linnæus describes the spots as "violaceo-azureis," and Wagler as "aureo-viridi, in violaceum vergente." Thus there can be no question that Linnæus' name refers to the Blue-spotted Dove, and Wagler's name to the Green-spotted Dove. This agrees with Erlanger's views.

I have used the generic name of *Turtur* for this dove as there is no doubt that *C. afra* of Linnæus is the species on which this genus is founded (*cf.* Boddaert, Tabl. Planch. Enlum. 1783, p. 10, pl. 160). G. M. Mathews was apparently the first to note this in Nov. Zool. xvii. 1910, p. 503.

[Irides brown; bill black or plumbeous, greyish brown in young; legs and toes red or claret, dull pinkish red in young.]

29. **Streptopelia semitorquata semitorquata.** Red-eyed Turtle-Dove.

Columba semitorquata Rüpp. Neue Wirb. 1835, p. 66, pl. 23: Tarantagebirge, N. Abyssinia.

a. ♀ ad. Amala River, 5300 ft. Oct. 22.

b. ♂ ad. Mt. Maroto, 3700 ft. Jan. 24.

Both are somewhat worn and moulting.

Total length in flesh: ♂ 13½ inches; ♀ 13⅛ inches. Wing: ♂ 190 mm.; ♀ 185 mm.

[Irides red; bill black; legs and toes red.]

In examining the whole series of this Pigeon I can recognise only three races as follows:—

STREPTOPELIA SEMITORQUATA SEMITORQUATA Rüpp.

Range. N.E. and E. to S.E. Africa generally.

Of this *Turtur s. minor* Erl. (J. f. O. 1905, p. 125: Route Umfudu-Gobwen, S. Somaliland, and Kismayu); and *T. s. intermedius* Erl. (op. cit. p. 124: Roba-Schalo, South Shoa, and Harar), are synonyms.

Wing-measurements are as follows:—Abyssinia, ♂ 192 mm.; ♀ 172 mm. Somaliland, ♂ 197 mm.; ♀ 197 mm. East Africa, ♂ 190–177 mm.; ♀ 187–185 mm. Portuguese East Africa, ♂ 191 mm.; ♀ 185–179 mm. Rhodesia and Gazaland, ♂ 192 mm.; ♀ 187 mm. Upper Congo, 185 mm. Transvaal, ♂ 197–186 mm.; ♀ 189 mm. Zululand, ♂ 193 mm.; ♀ 185 mm.

STREPTOPELIA SEMITORQUATA ERYTHROPHRYS Sw. Birds W. Afr. ii. 1837, p. 207, pl. 22: West Africa, Senegal.

Range. West Africa and Fernando Po.

Wing-measurements: Mainland, ♂ 185–172 mm.; ♀ 176–172 mm. Fernando Po, ♂ 179–169 mm.; ♀ 168–169 mm.

STREPTOPELIA SEMITORQUATA SHELLEYI Salvad. Cat. Birds B. M. xxi. 1893, p. 419: Niger.

Range. Niger to Upper White Nile.

Wing measurements: ♂ 179–169 mm.; ♀ 175 mm.

30. **Streptopelia capicola damarensis.** Damaraland Turtle-Dove.

Turtur damarensis Finsch & Hartl. Vög. Ost-Afr. 1870, p. 550: Damaraland (*Andersson*), Gross-Namakaland (*Levaill.*).

a. ♂ ad. Amala River, 5500 ft. Oct. 12.

b. ♂ ad. Turkwel River, 1950 ft. Jan. 14.

The bird from Amala is rather worn and moulting, and the other is in bright plumage and very little worn.

Total length in flesh: 12½ & 11 inches. Wing: 163 & 155 mm.

The Amala specimen agrees perfectly with specimens from Damaraland, and I cannot recognise *T. c. tropica* Reichw. (Orn. Monatsb. x. 1902, p. 139: East Africa) as distinct.

The specimen from the Turkwel River is much lighter in colour and larger than the other from Amala and is, I think, a female though marked as a male.

Certainly specimens from Mt. Elgon and other parts of British East Africa seem to be darker than *S. c. damarensis*, but agree well with specimens of *S. capicola capicola* (*C. vinacea* var. *capicola* Sundev. Krit. om Levaill. 1857, p. 54: Environs du Cap, *cf.* Levaill. Ois. d'Afr. vi. 1808, p. 79) from south-east Africa.

[Irides brown; bill black; legs and toes red. The Turkwel River bird has: Irides pale yellow, eyelids red; bill black; legs and toes red. Common in the dry country.]

31. **Streptopelia lugens.** Dusky Turtle-Dove.

Columba lugens Rüpp. Neue Wirb. 1835, p. 64, pl. 22: Dongola, Abyssinia.

a, b. ♂ ♀. Hills south of Narossura, 7200 ft. Nov. 4.

Both are in good plumage, the male being rather worn on the tail.

Total length in flesh: 11½ inches. Wing: ♂ 178 mm.; ♀ 172 mm.

There is no difference in coloration between the male and female.

[Irides reddish brown, male lighter, around eyes red; bill bluish brown; legs and toes red. Appears to be quite common.]

32. **Stigmatopelia senegalensis senegalensis.** Senegal Turtle-Dove.

Columba senegalensis Linn. Syst. Nat. 12th ed. i. 1766, p. 283: Senegal.

a. ♂ ad. Narossura River, 5000 ft. Nov. 16.

b. ♀ juv. Annamuget, Bakoro, 3700 ft. Feb. 2.

The male is in good dress and but slightly worn. The young bird is moulting from the young to the adult dress.

Total length in flesh: ad. $10\frac{1}{8}$ inches; juv. $10\frac{1}{4}$ inches. Wing: ad. 133 mm.; juv. 130 mm.

[*Ad.* Irides brown, eyelids red; bill black; legs and toes red. *Juv.* Legs and toes claret.]

In naming this bird I have been carefully through the whole series in the British Museum, and I fail to see more than two races on the mainland of Africa and one from the Island of Socotra, three in all as follows:—

STIGMATOPELIA SENEGALENSIS SENEGALENSIS Linn.

Range. West, East, and South Africa.

Wing-measurements as follows:—Abyssinia, ♂ 141-135 mm. Somaliland, ♂ 137 mm. East Africa, ♂ 140–134 mm.; ♀ 134–131 mm. Congo, ♂ 133 mm. Tanganyika, ♂ 134 mm. Nyasaland, ♂ 137–131 mm. West Africa, ♂ 144–131 mm.; ♀ 135–132 mm. (two specimens unsexed from Senegal 138 and 136 mm. respectively). South Africa, ♂ 138–135 mm.; ♀ 134–132 mm. (one ♀ from Woodbush, N.E. Transvaal, 139 mm.).

Arabian birds also appear to belong to this race. ♂, wing 134–131 mm.

I cannot recognise *T. s. æquatorialis* Erl. (Orn. Monatsb. xii. 1904, p. 98: Menaballa, Route Harar, Adis-Abeba, and Harar); it therefore becomes a synonym.

STIGMATOPELIA SENEGALENSIS ÆGYPTIACA Lath.

Columba ægyptiaca Lath. Ind. Orn. ii. 1790. p. 607, no. 49: Egypt.

I have gone into the name given by Forskål to this race (*Columba testaceo-incarnata*, Descript. Animal. Av. 1775, p. 5: Egypt), and find that on p. vi. he gives the name of *incarnata* and on p. 5 the name of *testaceo-incarnata*; I am of opinion, therefore, that although Sherborn has included the name in his Index Animalium, 1902, Forskål's name is not binomially correct and cannot stand.

Size large, and dark in colour.

Range. Egypt and Palestine.

Wing-measurements: Egypt, ♂ 152–148 mm.; ♀ 145 mm. Palestine, ♀ 139 mm., one unsexed 142 mm.

STIGMATOPELIA SENEGALENSIS SOKOTRÆ C. Grant.

Streptopelia senegalensis sokotræ Claude Grant, Bull. B. O. C. vol. xxxv. 1914, p. 19: Hadibu Plain, N. Sokotra.

Paler, and size somewhat smaller than *S. s. senegalensis.*

Type ♂ ad. Hadibu Plain, N. Sokotra. 12th Dec., 1898 (W. R. Ogilvie-Grant & H. O. Forbes). Wing: 129 mm.

Range. Island of Socotra.

Wing-measurements: ♂ 133–123 mm.; ♀ 127–123 mm.

Mr. Ogilvie-Grant and Dr. Forbes in their paper on the Birds of Sokotra, "Nat. Hist. of Sokotra & Abd el Kuri," Aves, 1903, p. 56, in speaking of this dove, state that it "has the forehead, chin, and throat, and sometimes the lower breast distinctly paler than Arabian examples of this species."

This, coupled with the small size, compels me to separate this form from either of the mainland races.

The one unsexed specimen from Muscat in the Museum collection has the wing 128 mm., and though small, agrees in coloration with Arabian specimens.

33. **Œna capensis.** Long-tailed African Dove.

Columba capensis Linn. Syst. Nat. 12th ed. i. 1766, p. 286: Cape of Good Hope (*ex* Brisson).

a. ♂ ad. Loita. Oct. 5.

b. ♀ ad. Kamchuru, Lobor dist., 3250 ft. Feb. 12.

c. ♂ ad. 20 miles E. of Nimule, 2200 ft. Feb. 25.

The specimen from Loita is in good clean dress, and the other two are both a little faded.

Total length in flesh: ♂ 10 & 7¾ inches (tail of the last imperfect); ♀ 9¾ inches. Wing: ♂ 106 & 101 mm.; ♀ 101 mm.

I am afraid I cannot recognise *Œ. c. anonyma* Oberholser (P. U.S. Nat. Mus. xxviii. 1905, p. 843: plains east of Mt. Kilimanjaro); all specimens I have examined seem to vary slightly, and I cannot see any tangible difference between specimens from the Cape and those from east Africa.

[♂. Irides dark brown; bill red, tip yellow; legs and toes red. ♀. Similar, except bill reddish black.]

34. **Tympanistria tympanistria.** White-breasted Wood-Dove.

Columba tympanistria Temm. & Knip, Pig. 1808–11, i. fam. sec. p. 80, pl. 36: "La partie méridionale de l'Afrique, vers le pays des Cafres."

a. ♀ ad. Amala River, 5300 ft. Oct. 24.

In good dress, rather darker on the head than specimens from south Africa.

Total length in flesh: 8½ inches. Wing: 112 mm.

[Irides dark brown; bill pinkish brown; legs and toes dull claret-colour.]

35. **Limnocorax niger.** Black Rail.

Rallus niger, Gmel. Syst. Nat. i. pt. 2, 1789, p. 717: Cape of Good Hope.

a. ♀ ad. Amala River, 5400 ft. Oct. 19.

b. ? juv. Narossura River, 5000 ft. Nov. 13.

c. ♂ imm. N.E. slopes Nakwai Hills, 3600 ft. Feb. 8.

Total length in flesh: ad. 8 inches; imm. 8¾ inches; juv. 7½ inches. Wing: juv. 99 mm.; imm. 101 mm.

The adult is in full moult and the wings are in full "flapper" state, *i.e.,* moulting altogether.

The young bird is apparently in first dress. The immature is not moulting and is in clean dress, being similar to the adult, but having ashy edges to the feathers, both above and below.

These birds agree with specimens from the type locality.

[*Ad.* Irides red, eyelids red; bill green; legs and toes coral-red. *Imm.* Irides red, eyelids red; bill green; legs and toes dull red. *Juv.* Irides red; bill dirty green; legs and toes reddish brown. Common, but seldom seen on account of its retiring habits.]

36. **Gallinula chloropus meridionalis.** African Moorhen.

Stagnicola meridionalis Brehm, Vogelf. 1855, p. 331: South Africa.

a. ♀ imm. Lake Naivasha, 6700 ft. Dec. 4.

Total length in flesh: 12½ inches. Wing: 145 mm.

This example is moulting on the body alone from first to second plumage (*cf.* Moults of *G. c. chloropus*, Ibis, 1914, p. 300).

[Irides reddish brown; bill greenish and red; legs and toes green. Common.]

To prove the validity or otherwise of this subspecies I have had to examine the whole of the *G. chloropus* group, and have come to the following conclusions:—

GALLINULA CHLOROPUS CHLOROPUS Linn.

Fulica chloropus Linn. Syst. Nat. 12th ed. i. 1766, p. 258: South Europe.

Gallinula minor Hartl. (J. f. O. 1860, p. 341: Senegal) is a synonym of *G. angulata*: and *Stagnicola minor* Brehm (Vogelf. 1855, p. 331: Germany) is a synonym of *G. c. chloropus.*

Range. Europe generally, Arabia, Egypt, and Azores.

Wing measurements: ♂ 188–173 mm.; ♀ 177–167 mm.

Indian, Ceylonese, Chinese and Japanese birds are in every way similar to those from Europe except that they are slightly smaller; they should perhaps bear the name of:—

G. C. PARVIFRONS Blyth.

Gallinula parvifrons Blyth, J. A. S. Bengal, xii. 1843, p. 180: nr. Calcutta.

G. burnesi Blyth (J. A. S. Bengal, xxiii. 1854, p. 737) was founded on a drawing by Burnes of a bird from Kabul, which is stated to have no white under tail-coverts and no white flank-stripes. I can find no bird from Asia that accords with this description.

The "less developed shield" is no character, and it must be borne in mind that Blyth compared his Calcutta bird with one from Mauritius.

Wing-measurements: ♂ 175–155 mm.; ♀ 162–159 mm.; ♂ from type loc. 162 mm.

Range. India, Ceylon, China, and Japan, and perhaps Tibet; two specimens from the latter country have the wing 157 mm. & 180 mm., the last being a male.

GALLINULA CHLOROPUS ORIENTALIS Horsf.

Gallinula orientalis Horsf. Tr. Linn. Soc. xiii. 1820, p. 195: Java.

Small, and with distinct blue on the wing-coverts.

Wing-measurements: ♂ 166–152 mm.; sexed and unsexed 166–145 mm., type 145 mm. One from Sumatra has the wing only 129 mm.

Range. Java, Sumatra, and the Celebes.

Five specimens from Luzon and Formosa seem to be rather intermediate between *G. c. orientalis* and *G. c. parvifrons*. Their wings measure 175–166 mm., two sexed males 170 mm. & 166 mm.

GALLINULA CHLOROPUS MERIDIONALIS Brehm.

Of this, *Stagnicola brachyptera* Brehm (Vogelf. 1855, p. 331: Middle Africa) is a synonym.

Small, with distinct blue on wing-coverts.

Apparently only distinguishable from *G. c. orientalis* by its shorter toes.

Wing-measurements: ♂ 175–147 mm.; ♀ 165–153 mm.

Range. Africa generally, except Egypt; it also occurs on the islands of St. Thomas and Annobon as recorded by Mr. D. A. Bannerman in his paper in this number of the Ibis *.

GALLINULA CHLOROPUS PYRRHORHOA Newt.

Gallinula pyrrhorhoa A. Newton, P. Z. S. 1861, p. 18: Mauritius.

Under tail-coverts deep buff colour.

Wing-measurement: 175–162 mm.

Range. Mauritius and Madagascar.

G. frontata, from Bouru, Ceram, and Celebes, coincides in its distribution with *G. c. orientalis* in the latter locality and is quite distinct, being large, dark, with no flank stripes or only the merest indications, and having the legs dark red.

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* *Cf.* p. 116.

37. **Fulica cristata.** Crested Coot.

Fulica cristata Gmel. Syst. Nat. i. pt. 2, 1789, p. 704: Madagascar.

a, *b*. ♀ ad. & imm. Lake Naivasha, 6700 ft. Dec. 3 & 6

Total length in flesh: ad. 17 inches; imm. 17¾ inches. Wing: ad. 129 mm.; imm. 193 mm. Weight of immature: 1½ lbs.

Both are in good dress. The immature, besides having browner flight-feathers, has the shield and knobs on the head considerably smaller.

In the National Collection there is only one specimen from the type locality, an immature bird, which agrees perfectly with birds of the same age from the mainland of Africa.

[*Ad.* Irides red; bill bluish white, crown white, "horns" red; legs and toes plumbeous. *Imm.* Irides brown; bill bluish horn; legs and toes plumbeous. Abundant.]

38. **Poliocephalus ruficollis capensis.** African Little Grebe.

Podiceps capensis Salvad. Ann. Mus. Civ. Genov. (2) i. 1884, p. 252: South Africa.

a, *b*. ♂ ♀ ad. Lake Naivasha, 6700 ft. Dec. 4.

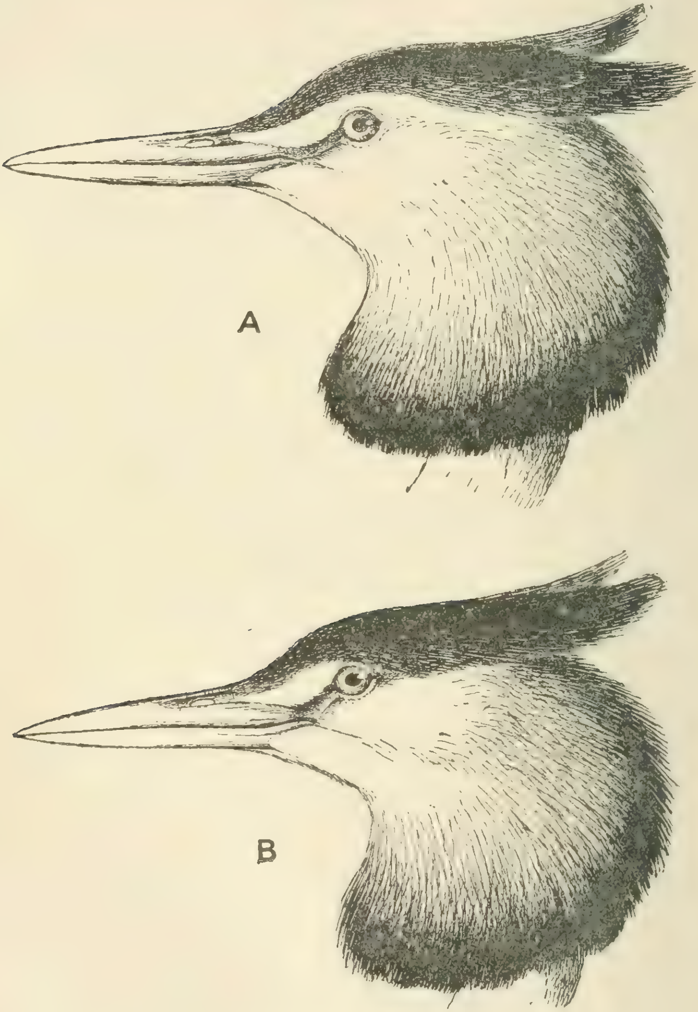
Total length in flesh: ♂ 10½ inches; ♀ 9½ inches. Wing: ♂ 103 mm.; ♀ 91 mm.

The male is in full summer dress and the female is moulting on the chest and may not be fully adult, as the chestnut of the neck and the black of the chin and throat are intermixed with white.

These specimens agree quite well with others from the type locality.

[Irides brown; bill black, greenish horn in ♀, bare skin

Text-fig. 2.



A. Head of *Podiceps cristatus cristatus*.

B. Head of *Podiceps cristatus infuscatus*.

yellow, greenish yellow in ♀; legs and toes black and olive-green, black on outside in ♀. Stomach contained aquatic insects. Very common.]

39. **Podiceps cristatus infuscatus.** African Great Crested Grebe. (Text-figure 2 B.)

Podiceps infuscatus Salvad. Ann. Mus. Civ. Genov. (2) i. 1884, p. 251: Lago Kilolé (Adda Galla).

a. ♂ ad. Lake Naivasha, 6700 ft. Dec. 4.

Total length in flesh: 23¼ inches. Wing: 187 mm.

In full summer dress.

This is quite a distinct subspecies, and besides having the upper parts and the flanks darker than in *P. cristatus cristatus* Linn. (Syst. Nat. 12th ed. i. 1766, p. 222: Europe), as pointed out by Salvadori and recognised by Sharpe (*cf.* Ibis, 1892, p. 545), has no trace of a superciliary streak, as was apparently first noticed by Gurney (*cf.* Ibis, 1885, p. 350). This character is as noticeable in winter as in summer dress.

The figure of the head in Stark & Sclater's 'Fauna of South Africa,' iv. 1906, p. 510, does not truly represent either one or the other; according to the artist, Mr. Grönvold, it was drawn from a South African specimen, and a faint line, visible on the drawing, has been pointed out to me as meant to separate the white lores from the dark feathering over the eye.

This same figure has been used in C. J. Patten's 'Aquatic Birds of Gt. Britain and Ireland,' 1906, p. 515, and emphasises once again the folly of publishing in any work figures or plates of a species that have not been drawn from a specimen taken in the country or that part of it to which the work alludes.

Range. The African Great Crested Grebe is probably found over the greater part of Africa, except possibly Algeria and Tunisia, where it is replaced by the European bird.

If further evidence is required to show that the African bird is distinct from the European, it is that during the winter months in the Northern Hemisphere, when the

European birds are in full winter dress, the African birds are in full summer dress.

[Irides reddish brown; bill brownish horn, tip of lower mandible lighter; legs and toes mottled yellow and black. Many seen, shy and difficult to shoot.]

40. **Hydrochelidon leucoptera leucoptera.** White-winged Tern.

Sterna leucoptera Temm. Man. d'Ornith. 1815, p. 483: Coasts of the Mediterranean.

a. ♂ imm. Lake Naivasha, 6700 ft. Dec. 4.

Total length in flesh: 9½ inches. Wing: 205 mm. Bill: 25 mm.

This bird is practically in full winter dress, but still retains a few of the immature feathers in the wings and tail.

In naming this bird I have gone through the whole series in the National Museum, both of this species and *H. nigra* Linn. (Syst. Nat. 10th ed. 1758, p. 137: Europe), and have noted the following differences between the species in winter and immature dress:—

H. l. leucoptera.—Adult winter. Appearance of crown and nape lighter (actually the black is much blacker), feathers more broadly edged with white, giving a very mottled appearance. Above lighter grey.

Young. On the average more white on forehead, and much whiter rump.

H. nigra.—Adult winter. Appearance of crown and nape darker (actually the black is more sooty). Above darker grey.

Young. On the average less white, often more fulvous, on forehead, and much greyer rump.

At all times and at all ages the bill of *H. leucoptera* is shorter than that of *H. nigra*, i. e. *H. leucoptera*, 22–25 mm., and *H. nigra*, 26–28 mm., taking adults only.

Specimens in the Museum show that *H. leucoptera* is found commonly in Africa, both east and west, and south to Cape Colony: *H. nigra* is apparently a rare visitor, as there are only three specimens in the Museum collection, two from Fantee and one from Victoria, Cameroon.

As regards the names, *Sterna fissipes* Linn. (Syst. Nat. 12th ed. i. 1766, p. 228 : South Europe), and *Sterna cinerea* Gm. (Syst. Nat. i. pt. 2, 1789, p. 607 : Italy), are both very indeterminate, but I think that the former applies more to *H. nigra* and the latter more to *H. leucoptera* in changing plumage, though it is impossible to decide the question with any certainty.

[Irides brown; bill black; legs and toes red. Several seen.]

41. **Gelochelidon nilotica nilotica.** African Gull-billed Tern.

Sterna nilotica Gmelin, Syst. Nat. i. pt. 2, 1789, p. 606 : Egypt.

a. b. ♂ ♀ ad. Lake Naivasha, 6700 ft. Dec. 4.

Total length in flesh : ♂ 15 inches ; ♀ 14 inches. Wing : ♂ 327 mm.

Both examples are in moult and rapidly assuming the full winter dress. In the female the first primaries are only partly grown and the wing cannot therefore be measured.

[Irides brown ; bill black ; legs and toes dark brown. Several seen.]

42. **Larus cirrhocephalus.** Grey-Headed Gull.

Larus cirrhocephalus Vieill. N. Dict. d'Hist. Nat. xxi. 1818, p. 502 : Brazil.

a, b, c. ♀ imm. Lake Naivasha, 6700 ft. Dec. 4.

One with a rather shorter bill, 30 mm. as against 35 and 37 mm. of the other two, has the [bill pinkish brown, tip black; legs and toes reddish flesh]. Except for the bill the bird is similar to the other two.

Total length in flesh ; 15¼, 15¾, 16 inches. Wing : 287, 291, 305 mm.

All are a little worn and one is in second dress, *i. e.* the dress that is assumed by the first autumn moult and which is retained till the following autumn moult.

I am unable to see any character that separates African from American specimens.

It is worthy of note that, so far as I can learn, the exact breeding-place of this bird is not known, and the eggs have not yet been described. The eggs in the British Museum, collected by Holland in the Argentine and recorded in the Cat. of Birds' Eggs (E. Oates), vol. v. 1901, p. 207, pl. xvi. fig. 5, are without doubt those of *L. maculipennis* Licht. (Verz. Doubl. 1823, p. 83: Monte Video); and I should not be surprised to learn that the breeding-place of this species was not in South America, especially as my own observations in the Argentine showed that *L. cirrhocephalus* left during the breeding-season (*cf.* Ibis, 1911, p. 475).

On going through the dated adults in the National Collection the following shows the months during which they occur on the two continents:—*Africa*: January, February, March, May, June, July, August, November and December. *South America*: March, April, May, July, September, November and December.

This certainly seems to point to the bird being found throughout the year on both continents and is in contradiction to my own observation quoted above.

Sir Frederick Jackson says that this gull breeds commonly on Lake Naivasha, but I have not been able to examine eggs in support of this.

[Irides brown; bill light brown, tip darker; legs and toes yellowish flesh. Common.]

43. **Sarciophorus tectus.** Senegal Plover.

Charadrius tectus Bodd. Tab. Pl. Enl. d'Hist. Nat. 1783, p. 51: Senegal, *ex* Brisson.

a. ♂ ad. 16 miles N.W. of Baringo, 3550 ft. Dec. 29.

Total length in flesh: 11¼ inches. Wing: 195 mm.

This bird is in quite good dress, very little worn. The white underparts are stained with sandy, due to the nature of the ground on which the bird was shot.

As regards *S. latifrons* Reichenow (Ornith. Centralb. 1881, p. 79: Berdera, R. Juba), I cannot, with the specimens before me, see any difference either in the white band of the forehead or in general colour between western and eastern birds.

The following measurements of the wings also show very little difference in this respect :—

Western : 193–180 mm. Two sexed males, 190–189 mm.

Eastern : 202–173 mm. Sexed males, 195–189 ; females, 192–173 mm.

[Irides yellow ; bill red, tip black, wattles red ; legs and toes red.]

44. **Afribyx senegallus.** Wattled Spur-winged Plover.

Parra senegallus Linn. Syst. Nat. 12th ed. i. 1766, p. 259 : Senegal.

a. ♀ ad. 50 miles S. of Gondokoro. Mar. 1.

Total length in flesh : 13¾ inches. Wing : 228 mm.

In good plumage, just a little worn.

This bird may not be fully adult as it has not yet assumed the black on the abdomen, or the black tip to both mandibles, which characters do not appear to be sexual or seasonal.

[Irides greyish yellow ; upper wattle red, lower yellow ; eyelids yellow ; bill yellow, tip of upper mandible black ; legs and toes yellow. Tolerably common and nesting.]

45. **Hoplopterus spinosus.** Egyptian Spur-winged Plover.

Charadrius spinosus Linn. Syst. Nat. 10th ed. 1758, p. 151 : Egypt.

a. ♂ ad. Lake Hannington, 3700 ft. Dec. 25.

Total length in flesh : 11¼ inches. Wing : 198 mm.

In very worn and bedraggled plumage.

[Bill black ; legs and toes black.]

46. **Hoplopterus armatus.** Black-and-white Spur-winged Plover.

Charadrius armatus Burchell, Travels, i. 1822, p. 501 : Klaarwater or Griquatown, Cape Colony.

a. ♀ ad. Loita, 6300 ft. Oct. 4.

Total length in flesh : 11½ inches. Wing : 215 mm.

In clean fresh dress, still moulting.

[Irides red ; bill black ; legs and toes black.]

47. **Stephanibyx coronatus.** Crowned Lapwing.

Charadrius coronatus Bodd. Tab. Pl. Enl. d'Hist. Nat. 1783, p. 49: Cape of Good Hope.

a. ♂ ad. Mt. Suswa. Sept. 27.

Total length in flesh: 11¾ inches. Wing: 202 mm.

In rather worn dress and moulting.

[Irides yellow; bill red, tipped with black; legs and toes red. Very common and several seen close to camp.]

48. **Stephanibyx melanopterus.** Black-winged Lapwing.

Charadrius melanopterus Cretzschm. Atlas, 1826, p. 46, pl. 31, published 1829 (*cf.* Oken, Isis. 1829, xxii. p. 1291): Djedda, Red Sea.

a. ♂ ad. Narossura Plateau, 8100 ft. Nov. 1.

Total length in flesh: 10¾ inches. Wing: 211 mm.

In somewhat worn plumage.

The differences between this species and *S. inornatus* Sw. (Birds W. Afr. ii. 1837, p. 239: Senegal) are well marked.

The name *Charadrius lugubris* Lesson (Dict. Sc. Nat. xlii. 1826, p. 36) apparently has priority over *Vanellus inornatus* Swainson and should be used. No type locality was given, but I designate Senegal.

The two main characters lie in the warm bronzy colour of the back of *S. melanopterus* compared with the cold oily green back of *S. lugubris* (= *S. inornatus*), and in the wing of the former measuring 225–201 mm. as against 183–169 mm. of the latter. There is also apparently some difference in the soft parts (*cf.* Ibis, 1912, p. 59).

I have been unable to examine specimens of *S. melanopterus* from the type-locality, and the figure in the 'Atlas' shows a very brown-backed bird, which may, however, be merely due to the artist.

As regards the *S. m. minor* Zedlitz (J. f. O. 1908, p. 180: South Africa), there appears to be very little difference between south, east, and north-east African specimens; the colour is the same, the frontal forehead band is a very variable quantity, and the wings measure respectively; from south Africa 215–201 mm., east Africa 213–205 mm., and north-east Africa 225–214 mm.

In these days of careful geographic work it is a pity a more definite locality has not been given for the type.

[Irides yellow, eyelids red; bill black; legs and toes dull red.]

49. **Eupoda asiatica.** Asiatic Dotterel.

Charadrius asiaticus Pallas, Reise Russ. R. ii. 1773, p. 715: S. Tartary.

a, b. ♂ ♀ imm. Loita, 6300 ft. Nov. 28.

c. ♀ imm. Turkwel River, 2000 ft. Jan. 11.

d, e. ♂ ad. Bakoro Plain, 3500 ft. Feb. 3.

Total length in flesh: ad. 9½ inches; imm. 9 & 8½ inches.

Wing: ad. 156 & 150 mm.; imm. ♂ 146 mm.; ♀ 150 & 147 mm.

The immature females are in clean plumage and not moulting: the male is moulting.

One of the two adults is moulting on the body.

[*Ad.* Irides brown; bill black; legs greyish flesh, feet darker. *Imm.* Irides brown; bill black; legs and toes greenish grey. In small flocks.]

50. **Afroxyechus tricollaris.** Tri-collared Sand-Plover.

Charadrius tricollaris Vieill. N. Dict. d'Hist. Nat. xxvii. 1818, p. 147: Africa. Africa meridionalis, Wagl. Syst. Av. 1827, p. 67. I designate nr. Cape Town.

a, b. ♀ ad. Loita, 6300 ft. Oct. 4.

c. ♀ imm. Amala River, 5500 ft. Oct. 11.

Total length in flesh: 6¾ & 7 inches. Wing: 116, 108, & 105 mm.

All are in moult, the immature still retaining some of the young dress on the wings and tail.

[Irides light brown, eyelids red; bill black, basal half yellow, orange, or flesh-colour; legs and toes flesh, yellowish flesh, or dusky flesh-colour. Tolerably common on the salt-marshes.]

51. **Himantopus himantopus.** European Stilt.

Charadrius himantopus Linn. Syst. Nat. 10th ed. 1758, p. 151: Egypt *ex* Hasselquist.

a, *b*. ♀ imm. Loita, 6300 ft. Oct. 4.

Total length in flesh: 14¼ inches. Wing: 214 & 213 mm.

Both are in young plumage and are starting to assume the adult feathering on the body.

[Irides reddish brown; bill black, base of lower mandible pink or flesh-colour; legs and toes bluish pink or bluish flesh. Plentiful.]

52. **Tringa stagnatilis.** Marsh Sandpiper.

Totanus stagnatilis Bechst. Taschenb. Deutschl. ii. 1803, p. 292: Germany.

a. ♂ ad. Lake Naivasha, 6700 ft. Dec. 12.

Total length in flesh: 9½ inches. Wing: 132 mm.

Moulting into winter dress, the old feathers being very worn and rusty.

[Irides brown; bill black, greenish at base; legs and toes dirty green. Common.]

53. **Tringa ochropus.** Green Sandpiper.

Tringa ocrophus Linn. Syst. Nat. 10th ed. 1758, p. 149: Sweden.

a. ♀ ad. Mau. Dec. 2.

Total length in flesh: 10 inches. Wing: 152 mm.

Still moulting into winter plumage on the body.

[Irides brown; bill olive-green, legs and toes yellowish grey. Several seen.]

54. **Tringoides hypoleucos.** Common Sandpiper.

Tringa hypoleucos Linn. Syst. Nat. 10th ed. 1758, p. 149: Sweden.

a. ♀ imm. Lake Naivasha, 6700 ft. Dec. 4.

Total length in flesh: 8 inches. Wing: 109 mm.

Moulting in the wings only.

[Irides brown; bill dark green; legs and toes plumbeous flesh.]

55. **Pisobia minuta.** Little Stint.

Tringa minuta Leisler, Nachtr. Bechst. Naturgesch. Deutsch. 1812, p. 74: Germany.

a. ♀ ad. Lake Naivasha, 6700 ft. Dec. 6.

Total length in flesh: 6 inches. Wing: 94 mm.

In full fresh winter dress.

[Irides brown; bill black; legs and toes dark brown. Several seen.]

56. **Gallinago nigripennis.** Black-quilled Snipe.

Gallinago nigripennis Bp. Icon. Faun. Ital., Ucc. 1832, text to pl. 43. p. 4: Cape of Good Hope.

a. ♂ imm. Mau, 9100 ft. Dec. 2.

Total length in flesh: 11½ inches. Wing: 130 mm.

In clean dress and very little worn. The light tips to the primaries show that this specimen is not fully adult.

[Irides brown; bill brown, dirty green at base; legs and toes greyish yellow. Appears to be common.]

57. **Gallinago gallinago.** Common Snipe.

Scolopax gallinago Linn. Syst. Nat. 10th ed. 1758, p. 147: Sweden.

a. ♂ ad. Loita, 6400 ft. Oct. 4.

Total length in flesh: 10½ inches. Wing: 135 mm.

In good dress and but little worn.

[Irides brown; bill light brown, black at tip; legs and toes dull green. Several seen.]

58. **Actophilus africanus.** African Jacana.

Parra africana Gmelin, Syst. Nat. i. pt. 2, 1789, p. 709: Africa, I designate Abyssinia.

a. ♀ ad. River Naam, 3150 ft. Feb. 16.

Total length in flesh: 13 inches. Wing: 167 mm.

In good plumage, very little worn.

[Irides brown; bill and crown bluish grey; legs and toes bluish grey. Stomach contained aquatic insects. Quite common and tame.]

59. **Cursorius temminckii.** Temminck's Courser.

Cursorius temminckii Sw. Zool. Illustr. ii. 1822, pl. 106 : Senegal (*cf.* Sw. Birds W. Afr. ii. 1837, p. 230).

a. ♂ ad. Lemek Valley. Oct. 6.

b, c. ♂ ♀ ad. Kamehuru, Lobor Dist., 3200 ft. Feb. 13.

Total length in flesh : 8 inches. Wing : ♂ 127 & 126 mm. ; ♀ 125 mm.

All three are in good clean dress ; they are rather dark-coloured specimens and have a dark tinge across the forehead ; they are, however, matched by specimens from both west and south Africa, and I can see no constant character that differentiates the eastern birds.

[Irides brown ; bill black, base of lower mandible whitish ; legs and toes cream or white. Contents of stomach, insects. Tolerably common.]

60. **Rhinoptilus africanus gracilis.** Two-banded Courser.

Cursorius gracilis Fisch. & Reichw. J. f. O. 1884, p. 178 : Masailand.

a. ♂ ad. Kijabe, 6200 ft. Sept. 24.

Total length in flesh : 8 inches. Wing : 132 mm.

In somewhat worn dress and moulting on body.

[Irides brown ; bill black ; legs and toes white. Seen only two or three times.]

In naming this bird I have examined carefully all the races of this Courser and have come to the following conclusions :—

RHINOPTILUS AFRICANUS AFRICANUS Temm.

Cursorius africanus Temm. Cat. Syst. Cab. Orn. 1807, p. 175, and p. 263 : Namaqualand.

A large, rather pale form. Wing : 161–147 mm.

Range. Little and Great Namaqualand and Damaraland across to Bechuanaland (part).

Of this *Cursorius bicinctus* Temm. (Man. d'Orn. ii. 1820, p. 515 : Interior of Africa, *ex* Le Vaillant, as is Temminck's *africanus*); *Tachydromus collaris* Vieill. (N. Dict. d'Hist. Nat. viii. 1817, p. 293: Africa. Africa meridionali locis sterilibus, *cf.* Wagl. Syst. Av. 1827, p. 81; a substitute name for *africanus* and founded on specimens in Temminck's collection); and *Cursorius grallator* Leadbeater (Trans. Linn. Soc. n. s. xvi. 1830, read Dec. 20, 1825, p. 92: no type locality), are synonyms.

RHINOPTILUS AFRICANUS SHARPEI.

Rhinoptilus africanus sharpei Erlanger, J. f. O. 1905, p. 59: South-east Africa.

For modern work I consider the non-recording of a type and the very vague type-locality given by Erlanger to be inexcusable. However, to avoid creating further names I use his name for this large dark race, and designate Deelfontein, central Cape Colony, as the particular type locality.

A large, dark form. Wing: 164–148 mm.

Range. Griqualand West, Bechuanaland (part), central Cape Colony to Orange River Colony and Transvaal.

RHINOPTILUS AFRICANUS BISIGNATUS Hartl.

Cursorius bisignatus Hartl. P. Z. S. 1865, p. 87: Benguella, Angola.

A small, pale form. Wing: 135 mm.

Range. Angola.

Only one specimen, the type, is in the National collection and is paler than east African birds. This character with a larger series may prove to be constant, so that I prefer, for the present, to keep the Angola race separate from the east African race.

RHINOPTILUS AFRICANUS GRACILIS Fisch. & Reichw.

Cursorius gracilis Fisch. & Reichw. J. f. O. 1884, p. 178: Masailand.

A small, somewhat dark race. Wing: 132–129 mm.

Range. German East Africa, British East Africa, and Uganda.

RHINOPTILUS AFRICANUS HARTINGI Sharpe.

Rhinoptilus hartingi Sharpe, Bull. B. O. C. iii. 1893, p. xiv : Somaliland.

A small rufous race. Wing : 145–139 mm.

Range. Somaliland.

61. **Rhinoptilus cinctus cinctus.** Heuglin's Courser.

Cursorius cinctus Heugl. Sitzb. K. Akad. Wiss. Wien, xix. 1856, p. 255 : Bahr el Abiad, *i. e.* White Nile.

In 'The Ibis' for 1863, p. 31, pl. i., Heuglin describes this bird under the genus *Hemerodromus* and gives the type-locality as Gondokoro, White Nile.

a. ♂ ad. N'gabotok, Turkwel River, 2200 ft. Jan. 10.

Total length in flesh : 9¾ inches. Wing : 157 mm.

In good clean dress and still moulting slightly.

[Irides brown ; bill black, base yellow ; legs and toes bluish flesh. Several seen in dry desert country, standing beneath "wait-a-bit" thorn bushes for shade.]

62. **Œdicnemus senegalensis.** Senegal Thick-knee.

Œdicnemus senegalensis Swains. Birds W. Afr. ii. 1837, p. 228 : Senegal.

a. ♂ imm. Lake Hannington, 3700 ft. Dec. 25.

b. ♀ ad. Kittigom, Chua Dist., 2850 ft. Feb. 21.

Total length in flesh : 16 inches. Wing : ad. 210 mm. ; imm. 207 mm.

The adult is quite worn, but is not yet moulting. The immature is generally much more sandy in colour than the adult.

[Irides yellow, eyelids yellow ; bill black, base yellow, base yellowish green in immature ; legs and toes yellowish grey, dirty yellow in immature. Several seen.]

63. **Œdicnemus capensis capensis.** South African Thick-knee.

Œdicnemus capensis Licht. Verz. Doubl. 1823, p. 69 : Cape of Good Hope.

a. ♀ ad. Loita, 6300 ft. Nov. 26.

Total length in flesh : 16¾ inches. Wing : 227 mm.

[Irides yellow, eyelids yellow; bill black, base yellow; legs and toes yellow, brownish in front.]

In naming this bird I have examined all the specimens in the British Museum, and have come to the following conclusions in regard to the various named races:—

ŒDICNEMUS CAPENSIS CAPENSIS Licht.

Œdicnemus capensis Licht. Verz. Doubl. 1823, p. 69: Cape of Good Hope.

Range. South, south-west, south-east to east Africa, north to Lado.

Wing: 243–214 mm. Three from Plettenberg Bay, Cape Colony, the nearest I can find to the type-locality, have the wing 229–228 mm.

Of this, *Œ. c. damarensis* Rchw. (Vög. Afr. iii. Nachtr. 1905, p. 801: German S.W. Africa) and *Œ. csongor* Madarasz (Arch. Zool. Budap. i. 1909, p. 11: Schirati, German East Africa), are synonyms.

The character in regard to the tail given by Madarasz is not by any means constant, and I can only find it in two specimens, one from Masailand, and the other from north Guaso Nyiro; whereas all the others from German and British East Africa agree with specimens from further south in every detail.

ŒDICNEMUS CAPENSIS AFFINIS Rüpp. Mus. Senck. ii. 1837, p. 210: Kordofan.

Range. Kordofan, Abyssinia, and Somaliland.

A smaller, very rufous race. Wing: 222–204 mm.

ŒDICNEMUS CAPENSIS DODSONI O.-Grant, Bull. B. O. C. x. 1899, p. xix.: Lahej, S. Arabia.

A small, greyer race with finer markings. Wing: 224–220 mm.

I have been unable to examine specimens of *Œ. c. psammochromus* Reichw. (Vög. Afr. iii. Nachtr. 1905, p. 801: Hinterlande von Togo), or of *Œ. c. ehrenbergi* Zedlitz (Orn. Monatsb. 1910, p. 9: Dahlak Island, Red Sea), which I should not be surprised to find is either *Œ. c. affinis* or *Œ. c. dodsoni*, and most probably the former.

64. **Neotis cafra.** Stanley Bustard.

Otis cafra Licht. Cat. Rer. Nat. Rar. Hamb. 1793, p. 36: Kaffirland.

a, b. ♂ ♀ ad. Amala River, 5400 ft. Oct. 16.

c. ♂ ad. S. Guaso Nyiro, 6600 ft. Nov. 29.

All are in good plumage, and there is no difference in coloration between the sexes.

Total length in flesh: ♂ 41 & 39¼ inches; ♀ 42⅛ inches.

Wing: ♂ 594 & 590 mm.; ♀ 570 mm.

Weight: ♂ 15½ & 12 lbs.; ♀ 13½ lbs.

I had at first thought that the east African bird was different from the south African, but I have come to the conclusion that the two south African specimens in the British Museum (one marked S. Africa, the type of *O. stanleyi* Gray, [Zool. Misc. 1831, p. 12]; and the other from Potchefstroom) are both immature, as they agree perfectly with a specimen from British East Africa that is undoubtedly immature.

These differ from the adult in their smaller size, in being much more sandy above, in having the lores, cheeks, and ear-coverts distinctly buffy and more finely marked, and in the grey of the neck and breast being vermiculated with black and buffy.

The striking difference between the size of the adults and young is shown as follows:—Young South African bird, no sex, has the wing 416 mm.; a Potchefstroom female has the wing 487 mm.; one from B. E. A., no sex, has the wing 480 mm.; and the adults, on the other hand, have the wing: a male in the British Museum from Lake Naivasha 609 mm., and others as stated above.

[Irides brown; bill, upper mandible dark brown, lower greenish; legs and toes dirty white, dirty yellowish white, or dirty cream. Tolerably common, usually in pairs.]

65. **Otis hartlaubii.** Hartlaub's Bustard.

Otis hartlaubii Heugl. J. f. O. 1863, p. 10: Sennaar.

a. ♀ ad. Bakoro, 25 miles E. Lobor Mts., 3500 ft. Feb. 2.

Total length in flesh: $24\frac{1}{4}$ inches. Wing: 306 mm.

[Irides yellow; bill light horn, culmen black; legs and toes dirty cream-colour. Common.]

66. **Otis senegalensis canicollis.** Grey-necked Bustard.

Otis canicollis Reichw. Orn. Centralb. May 1881, p. 79: Berdera, R. Juba.

a. ♀ ad. Lemek Valley, 6400 ft. Oct. 6.

b. c. ♂ ♀ ad. Amala, 5500 ft. Oct. 25.

d. ♂ ad. E. of Mt. Leganisho, 7000 ft. Nov. 1.

All are in good dress.

Total length in flesh: ♂ $22\frac{1}{2}$ & 23 inches; ♀ $22\frac{1}{2}$ & 23 inches. Wing: ♂ 319 & 305 mm.; ♀ 311 & 310 mm. Weight: one female, $2\frac{1}{2}$ lbs.

In the orginal description Reichenow gives no type locality, but in the July number of the J. f. O. of the same year he distinctly states, "*Hab.* Berdera (Africa orientalis)."

This proves that he is right in placing *O. s. somaliensis* Erl. (J. f. O. 1905, p. 82, Taf. ii. fig. 2: Gandakore, nr. Harar) as a synonym of *O. s. canicollis* (*cf.* Vög. Afr. iii. Nachtr. p. 802), and that Neumann is wrong in keeping these distinct (*cf.* J. f. O. 1907, p. 307), but is right in attaching these races to *O. senegalensis* Vieill.

I cannot, however, see the differences between this race (*O. s. canicollis*) and the east African one, *O. s. erlangeri* Rchw. (Vög. Afr. iii. Nachtr. 1905, p. 802: Matschako, B.E.A.), which therefore becomes a synonym, and makes one race from Somaliland to British and German East Africa.

[Irides brown; bill: tip horn or bluish horn, basal portion yellow, around nostrils pink; legs and toes dirty cream. Quite common.]

67. **Otis kori struthiunculus.** North African Kori Bustard.

Otis kori struthiunculus Neum. J. f. O. 1907, p. 306: Lake Zuai, Abyssinia.

a. ♀ ad. Loita, 6300 ft. Oct. 3.

b. ♀ imm. Lemek Valley, 6600 ft. Oct. 6.

c. ♀ ad. Amala River, 5300 ft. Oct. 19.

All are somewhat worn.

The young bird differs from the adult principally in its smaller size and in being somewhat lighter above.

Total length in flesh: ad. 43¾ & 40½ inches; imm. 36¾ inches. Wing: ad. 630 & 605 mm.; imm. 555 mm.

These three specimens agree well with the description of this subspecies, and show the distinctive difference in the lores and superciliaries when compared with the single south African specimen before me of *O. k. kori* Burch., the type-locality of which is "Junction of Orange and Vaal Rivers, Griqualand" (*cf.* Burchell, Trav. i. 1822, p. 391).

The wing in this south African bird measures 530 mm, The bird is undoubtedly immature, and besides showing the mottled lores and superciliaries as pointed out by Neumann, is distinctly more sandy above than the immature bird from the Amala River.

[*Adult.* Irides yellow-brown or yellow, lower half pale brown: bill, upper mandible dark brown, lower greyish white or black, base of lower mandible light horn; legs and toes dirty cream or dirty greenish white.

Immature. Irides yellow; bill, upper mandible dark horn, lower whitish; legs and toes dirty white.

More commonly seen than the Stanley Bustard.]

68. **Threskiornis æthiopica.** Sacred Ibis.

Tantalus æthiopicus Lath. Ind. Orn. 1790, p. 706: Æthiopia; probably Egypt, *cf.* Bruce, Trav. to Disc. Source of Nile, vol. v. App. i. 1790, p. 172, pl. 35.

a. ♂ imm. Lake Naivasha, 6700 ft. Dec. 4.

Total length in flesh: 30¼ inches. Wing: 382 mm.

The single example is moulting into adult feathering on the wings.

This specimen matches very well the figure given by Bruce.

[Irides brown; bill black; legs and toes black. Quite common.]

69. **Plegadis falcinellus.** Glossy Ibis.

Tantalus falcinellus Linn. Syst. Nat. 12th ed. i. 1766, p. 241 : Austria.

a. ♂ ad. Lake Naivasha, 6700 ft. Dec. 4.

Total length in flesh : 22¼ inches. Wing : 272 mm.

In full winter plumage and a little worn.

[Irides brown ; bill plumbeous : legs and toes brownish black. Very common.]

70. **Ibis ibis.** African Wood Ibis.

Tantalus ibis Linn. Syst. Nat. 12th ed. i. 1766, p. 241 : Egypt.

a. ♂ imm. Guaso Nyiro, 6500 ft. Nov. 28.

Total length in flesh : 38½ inches. Wing : 466 mm.

In immature brown dress and somewhat worn.

[Irides grey ; bill yellow ; head red ; legs and toes greyish flesh, upper three inches of legs red. Stomach contained grass and sand. The only one seen.]

71. **Abdimia abdimii.** White-bellied Stork.

Ciconia abdimii Licht. Verz. Doubl. 1823. p. 76 : Dongola, Egyptian Sudan.

a. ♂ ad. Assua River, 20 miles E. of Nimule, 2100 ft. Feb. 25.

Total length in flesh : 29¼ inches. Wing : 400 mm.

In quite good plumage, very little worn.

[Irides brown, bare skin blue, red spot in front of and above eyes ; V-shaped patch on throat red ; bill dirty green, tip red ; legs and toes dirty green, red at joint of leg. Several seen flying round our camp.]

72. **Ephippiorhynchus senegalensis.** African Jabiru.

Micteria senegalensis Shaw, Tr. Linn. Soc. vol. v. 1798, p. 35, pl. 3 : Senegal.

a. ♀ ad. Naam River, Lakwa, 3150 ft. Feb. 16.

Total length in flesh : 51¼ inches. Wing : 628 mm.

Weight : 11 lbs.

In good plumage ; wings and tail somewhat worn.

[Irides yellow, eyelids red and yellow ; bill red with black band in centre, yellow patch on crown (forehead); wattles yellow; legs black, joints red, feet red and black; bare skin on breast red, edged with yellow and blue. Stomach contained insects. Several seen for the first time on the Naam River, where they were conspicuous objects, wading with Herons, Ibises, Jacanas, etc.]

73. **Leptoptilus crumeniferus.** African Marabou.

Ciconia crumenifera Less. Traité, 1831, p. 585: Senegal.

a. ♂ ad. E. of Mt. Leganisho, 6600 ft. Oct. 31.

Total length in flesh: 52⅛ inches. Wing: 685 mm.

Weight: 16 lbs.

Very worn and in moult.

[Irides brown; skin round eyes red, mottled with black; bill pale horn, black at base; legs and toes white? Common everywhere.]

74. **Scopus umbretta bannermani.** Greater Hammerhead.

Scopus umbretta bannermani Claude Grant, Bull. B. O. C. vol. xxxv. 1914, p. 27: Mt. Leganisho, Brit. East Africa.

Considerably larger than *S. umbretta umbretta*; often somewhat more ashy below. Wing 300–330 mm.

Type, ♀ ad. Mt. Leganisho, B.E. Africa. Collected on Oct. 31, 1912, by Willoughby P. Lowe. Wing 328 mm.; culmen 77 mm.; tarsus 65 mm.

Named in honour of Mr. D. A. Bannerman.

a. ♀ ad. Mt. Leganisho, 6600 ft. Oct. 31.

b. ♂ ad. Narossura River, 5000 ft. Nov. 15.

Total length in flesh: ♂ 20⅛ inches; ♀ 20¾ inches. Wing: ♂ 311 mm.; ♀ 328 mm.

The October bird is in fresh new dress, and the November one is rather worn and is moulting.

[Irides brown; bill black; legs and toes black. Stomach contained fish, frogs, dragonflies, and a newt. Common, wherever water is found.]

It was first pointed out by Major Kelsall and Mr. D. A. Bannerman (Ibis, 1914, p. 225) that the true *Scopus* *umbretta* Gmelin (Syst. Nat. i. pt. 2, 1789, p. 618 : Africa = Senegal, *cf.* Buffon, Pl. Enl. n. 796) is quite a small bird, having the wing 248–256 mm., as compared with 300–330 mm. of other specimens from the rest of Africa. Therefore the larger bird must in future bear the name of *Scopus umbretta bannermani.*

Cepphus scopus Wagl. (Syst. Av. 1827, p. 146) is a substitute name for *Scopus umbretta.*

Ardea fusca Licht. (Forst. Descr. Anim. 1844, p. 47 : Cape of Good Hope) is preoccupied by *Ardea fusca* Lath. (Ind. Orn. ii. 1790, p. 700 : Cayenne).

Range. *Scopus umbretta bannermani* : All Africa, including western Arabia and Madagascar, excepting Senegal to Nigeria. Single birds from Angola and Madagascar have rather shorter bills, but otherwise agree.

Scopus umbretta umbretta.—Senegal to Nigeria.

75. **Phoyx purpurea.** Purple Heron.

Ardea purpurea Linn. Syst. Nat. 12th ed. i. 1766, p. 236 : France.

a. ♀ juv. Lake Naivasha, 6700 ft. Dec. 5.

Total length in flesh : 33½ inches. Wing : 330 mm.

In fresh first plumage; feathers appearing on mantle are first-plumage ones.

[Irides yellow, round eye greenish yellow ; bill striped black, orange, and yellow ; legs—lower half and feet dark brown, upper half greenish yellow.]

76. **Ardea melanocephala.** Black-necked Heron.

Ardea melanocephala Vig. & Childr., in Denh. & Clapp. Trav. ii. App. 1826, p. 201 : between Lake Chad and the coast of Tripoli ; probably near or at Lake Chad.

a, b. ♂ ad., ♂ imm. Assua River, 10 miles E. of Nimule, 2100 ft. Feb. 25.

Total length in flesh : ad. 35½ inches ; imm. 37 inches. Wing : ad. 392 mm. ; imm. 382 mm.

The adult is in good clean dress ; the immature bird is apparently in first dress.

[*Adult.*—Irides yellow, bare skin round eyes greyish yellow; bill: upper mandible black, lower flesh-colour, tip yellow; legs and toes dark brown.

Immature similar, except lower mandible pinkish horn.

Stomach contained lizards, mice, and locusts. Several een on the dry ground, away from the river.]

77. **Ardea cinerea cinerea.** Common Heron.

Ardea cinerea Linn. Syst. Nat. 10th ed. 1758, p. 143: Sweden.

a, b. ♀ ad., ? imm. Turkwel River, 1950 & 2000 ft. Jan. 12 & 13.

Total length in flesh: 36 inches. Wing: ad. 433 mm.; imm. 411 mm.

The adult is in good dress and is starting to assume by moult the plumes of the breast and back. The immature bird is in first dress and is rather worn.

[*Adult.*—Irides yellow; bill black, tip of upper mandible yellow, lower dirty yellow; yellow spot in front of eye; skin around eye greenish; legs and toes brown, top of legs greenish.

Immature.—Irides yellow; bill black, tip and base of lower mandible yellowish; yellow spot in front of eye; skin around eye greenish; legs and toes blackish green.

The adult was shot sitting in a thorn tree.]

78. **Mesophoyx intermedius brachyrhynchus.** Short-billed White Heron.

Herodias brachyrhynchus Brehm, J. f. O. 1858, p. 471: Blue Nile, between 12° and 13° N. latitude.

a. ♀ ad. Lake Naivasha, 6700 ft. Dec. 4.

Total length in flesh: 27½ inches. Wing: 316 mm.

In quite good new dress, and having both dorsal and breast plumes.

The character of the yellow upper half of the leg holds quite good in all specimens that I have examined.

One female from Elea, Baro River, Sudan, in the National collection, obtained by Zaphiro for Mr. McMillan, appears in the dry skin to have an altogether black leg, but if carefully examined a difference can be noted and doubtless the upper half of the leg was yellow; though unfortunately no soft parts are recorded on the label, except those of the eye.

[Irides yellow, skin around eye greenish yellow; bill yellow; legs and toes black, upper half of leg yellow. Common on Lake Naivasha.]

79. **Egretta garzetta garzetta.** Little Egret.

Ardea garzetta Linn. Syst. Nat. 12th ed. i. 1766, p. 237: "in Oriente."

a. ♀ ad. Lake Naivasha, 6700 ft. Dec. 4.

Total length in flesh: 25 inches. Wing: 265 mm.

Rather worn and moulting. Back and breast plumes poor; no nape plumes.

[Skin round eyes greenish yellow; bill black, base of lower mandible whitish brown; legs black, feet greenish yellow.]

80. **Butorides atricapilla.** African Black-headed Heron.

Ardea atricapilla Afzelius, Kongl. Vet.-Akad. nya Handl. Stockh. xxv. 1804, p. 264: Sierra Leone.

a. ♂ imm. Narossura River, 4950 feet. Nov. 12.

Total length in flesh: 18⅛ inches. Wing: 172 mm.

In fresh first plumage.

[Irides yellow, above and below eye greenish yellow; bill black, lower half of lower mandible green; legs and toes green in front, yellow behind. Stomach contained frogs. Only two seen.]

81. **Bubulcus ibis.** Buff-backed Egret.

Ardea ibis Linn. Syst. Nat. 10th ed. 1758, p. 144: Egypt.

a. ♀ ad. Lake Naivasha, 6700 ft. Dec. 4.

Total length in flesh: 19¼ inches. Wing: 240 mm.

In winter dress and still moulting. Somewhat worn.

[Irides yellow, round eye whitish yellow; legs and toes dark brown.]

82. **Phœniconaias minor.** Smaller Flamingo.

Phœnicopterus minor Geoffr. Bull. Sc. Soc. Philom. 1798, p. 98: Senegal (*cf.* Vieill. N. Dict. d'Hist. Nat. xxv. 1817, p. 520).

a, b. ? ad., ♂ juv. Lake Hannington, 3700 ft. Dec. 25.

Total length in flesh: ad. 32½ inches; juv. 29 inches. Wing: ad. 330 mm.; juv. 304 mm.

The adult is very worn and faded, and is apparently in summer dress. The young bird is moulting into a more adult dress.

[*Adult.* Irides reddish yellow; bill red, tip black; legs and toes red.

Juv. Irides brown; bill dirty brown, bare skin of face black; legs and toes grey.

Abundant; no signs of *P. roseus*.]

83. **Sarkidiornis melanotus africanus.** African Knob-billed Duck.

Sarkidiornis africanus Eyton, Mon. Anat. 1838, p. 103: Gamba River, *i. e.* Gambia River, West Africa.

a. ♂ ad. Lake Naivasha, 6700 ft. Dec. 6.

Total length in flesh: 25½ inches. Wing: 346 mm.

In quite good dress, rather faded above in parts.

I can appreciate this race, which is always smaller than specimens of *Sarkidiornis melanotus melanotus* (*Anser melanotus* Penn. Ind. Zool. 1769, p. 12, pl. xi.: Ceylon).

It is worthy of note that Pennant's original description gives the "back and wings black, but the ends of the primary feathers of a fine variable green," which does not appear to be an absolutely correct description.

The copy of the first edition of Pennant's work, examined by me at the Linnean Society, is not dated, and I have quoted the date 1769 from Sherborn, Ind. Anim. 1902, p. xliii.

[Irides brown; bill dark brown, tip of lower mandible white; legs and toes grey. Only one seen.]

84. **Alopochen ægyptiacus.** Egyptian Goose.

Anas ægyptiaca Linn. Syst. Nat. 12th ed. i. 1766, p. 197 : Egypt.

a ♀ ad. S. Guaso Nyiro, 6500 ft. Nov. 28.

Total length in flesh: 27 inches. Wing: 378 mm. Weight: 4¼ lbs.

In good dress, very little worn.

[Irides yellow; bill pink and black; legs and toes pink.]

85. **Anas undulata.** Yellow-billed Duck.

Anas undulata Dubois, Orn. Gall. i. 1839, p. 119, pl. 77 : Cape of Good Hope.

a. ♂ ad. Lake Naivasha, 6700 ft. Dec. 4.

Total length in flesh: 22 inches. Wing: 251 mm.

In good dress and very little worn.

There are no specimens in the National collection from the type-locality, and though I myself have shot many of these ducks near Cape Town, unfortunately I did not preserve them. Collectors should, where common birds are concerned, be informed of the type-localities so that one or two specimens could be collected.

[Irides brown; bill: upper mandible yellow, tip and around nostrils black; lower mandible, tip and basal three-fourths black, remainder yellow; legs and toes dark brown. Very common.]

86. **Nettion punctatum.** Hottentot Teal.

Anas punctata Burch. Trav. i. 1822, p. 233 : Zak River, Cape Colony.

a, b. ♂ ♀ imm. Lake Naivasha, 6700 ft. Dec. 3.

Total length in flesh: 13½ & 13¼ inches. Wing: 146 and 155 mm. Weight: ♂ ½ lb.

Neither is adult, and the male is moulting on the neck.

[Irides brown; bill blue, ridge of culmen black; legs and toes blue. Does not appear to be common; these specimens were obtained from a small flock of five.]

87. **Dafila acuta.** Common Pintail.

Anas acuta Linn. Syst. Nat. 10th ed. 1758, p. 126: Sweden.

a. ♀ ad. Mau, 9100 ft. Dec. 2.

Total length in flesh: 20½ inches. Wing: 253 mm.

In bright, but worn dress; below, the whole of the underparts are rusty through weathering; not moulting.

[Irides brown; bill black, greyish on sides and at base; legs and toes greenish grey. This was the only duck seen on the Mau Escarpment.]

88. **Pœcilonetta erythrorhyncha.** Red-billed Teal.

Anas erythrorhyncha Gm. Syst. Nat. i. pt. 2, 1789, p. 517: Cape of Good Hope.

a. ♂ ad. S. Guaso Nyiro, 6500 ft. Nov. 29.

Total length in flesh: 17½ inches. Wing: 224 mm. Weight: 1 lb.

In clean new dress and still moulting.

I can find no specimen in the National collection from the type-locality.

[Irides brown; bill pink, stripe between nostrils black, lower mandible black, pink at tip; legs and toes plumbeous. Shot from a flock of about fifty.]

89. **Spatula clypeata.** Common Shoveler.

Anas clypeata Linn. Syst. Nat. 10th ed. 1758, p. 124: Sweden.

a. ♂ ad. Lake Hannington, 3700 ft. Dec. 25.

Total length in flesh: 19¼ inches. Wing: 232 mm.

This specimen is badly worn, faded and almost bleached to a creamy colour, so that it is very difficult to see in what state of dress it really is; but it appears to be in eclipse and is starting to moult.

[Irides yellow; bill black; legs and toes orange. Shot from a flock of about 25; the only one in this peculiar plumage.]

90. **Phalacrocorax lucidus.** White-breasted Cormorant.

Halieus lucidus Licht. Verz. Doubl. 1823, p. 86: Cape of Good Hope.

a. ♀ imm. Lake Naivasha, 6700 ft. Dec. 4.

Total length in flesh: 31 inches. Wing: 315 mm.

Apparently not quite fully adult. Moulting.

[Irides green; pouch dirty yellow; bill greyish horn; legs and toes black. Several seen, the one shot was nesting and had a well developed egg inside.]

91. **Microcarbo africanus.** Long-tailed Cormorant.

Pelecanus africanus Gm. Syst Nat. i. pt. 2, 1789, p. 577: Africa; I designate White Nile District.

a. ♂ imm. Lake Naivasha. Dec. 5.

b. ♀ imm. 15 miles S. of Baringo. Dec. 26.

Total length in flesh: ♂ 22½ inches; ♀ 21 inches. Wing: ♂ 212 mm.; ♀ 197 mm. Weight: ♂ 1½ lb.

The male is apparently changing from the first to the second plumage. The female is apparently changing into the last stage before the full adult is reached, as both black and ashy feathers are coming in on the breast.

[♂. Irides brown; bill brown, banded with yellow, base of lower mandible and pouch yellowish flesh, bare skin in front of eye pale yellow; legs and toes black.

♀. Irides red; bill: upper mandible black, lower yellow and barred with brown; legs and toes black.

Very common on Lake Naivasha.]

92. **Pelecanus onocrotalus.** Mitred Pelican.

Pelecanus onocrotalus Linn. Syst. Nat. 10th ed. 1758, p. 132: Africa; I designate White Nile District.

a. ♂ ad. Lake Naivasha, 6700 ft. Dec. 3.

b. ♂? juv. Lake Hannington. Dec. 25.

Total length in flesh: ad. 73 inches; juv. 52½ inches. Wing: ad. 684 mm.; juv. 592 mm. Culmen: ad. 430 mm.; juv. 233 mm. Weight: ad. 18 lbs.

In the adult the tail is in full moult and the number of feathers cannot be counted; it is in very worn plumage and moulting, and has no swelling on the forehead. It appears to be a very old bird.

In the young example the tail is composed of 22 feathers, and is in entirely brown plumage and not much worn. Evidently in first dress.

[*Ad.* Irides red-brown; bill blue, pinkish flesh, red in stripes; legs and toes orange; round eye flesh; pouch yellow.

Juv. Irides yellow, pouch dirty yellow; bill greyish horn; legs and toes dirty yellow.

Two seen at Lake Naivasha; tolerably common and associating with Flamingoes at Lake Hannington.]

[To be continued.]

II.—*A recent Ornithological Discovery in Australia.*

By Gregory M. Mathews, F.R.S.E., M.B.O.U.

In the Introduction to my 'List of the Birds of Australia,' 1913, pp. xviii–xxiv, I made a few comments on zoo-geographical study, and on pp. xxv–xxvi added to the Australian avifauna three species, representing three genera not hitherto represented in the fauna, viz., *Globicera pacifica*, *Geoffroyus geoffroyi*, and *Eclectus pectoralis*. That two of these were residents newly brought to light was made clear by the fact that they were new subspecific forms, and not subspecies previously named from elsewhere and here simply recorded. For the first-named an old name was revived, but the fact remains the same.

Many ornithologists of repute have handled collections of birds from the islands north of the Australian continent, but they have rarely compared them with Australian birds, and appear to have been unacquainted with the local conditions and with the vast extent of Australia, ornithologically considered. Showing a disregard of the literature, they have probably caused considerable confusion and have retarded the advancement of knowledge. This is written without prejudice, but simply from an examination of the facts displayed by a criticism of the results obtained. There would be no hesitation in admitting the accuracy of this statement were I to indicate the errors committed; but this I do not now intend to do, and I would suggest that if a little more time were expended, coincident with more thought, many mistakes would be prevented, and useless word-battles obviated.

There is scope for much good work, and it seems unscientific to employ one's time in indicating errors of commission and omission on the part of the critic. When criticism is made the critic should deal with facts, not theories or fancies, for the latter belong to the province of the individual, and do not appear in nature.

I write this introduction because I here propose to indicate some facts of an extraordinary nature so far as the ornithology of Australia is concerned, and desire to show the delightful study that can be opened up by a little thought being displayed in connection with a few facts, and to add some novel ideas of my own suggested by these. The facts are incontrovertible, the ideas argumentative, and in considering them, much of the ancient history of the land has to be taken into consideration.

First I have to deal with the geography of Australia. Being my own land and especial study, I constantly find that to a European ornithologist it is a *terra incognita,* and that such a one would place a locality a thousand miles distant from its correct position, and also that another would think that a bird of less power of flight than a Wren could traverse two thousand miles across country in a night.

These are concrete examples, but I must defer from naming the authorities who make such statements. Of natural barriers, as opposed to geographical boundaries, I anticipate complete ignorance, and do not concern myself with errors in that direction.

This paper will only deal with a phase of the Queensland avifauna; but here again the extent and nature of Queensland is not understood by European workers, and it may be as well to give a few figures.

Cape York, the extreme north point of Queensland, lies in latitude 10° 50′ South, while Brisbane, the capital, situated in the extreme south of Queensland, is in latitude 27° 50′ South; this is a distance of about 1400 miles. This might be regarded as inconsiderable by the general ornithologist, were it not that mountain ranges intervene, and these cause diverse climatic conditions and varied rainfall. Again, patches of forest country are mingled with tracts of desert, while along the coast there are great areas covered with mangrove swamps, so that it is very necessary to understand local conditions so as to interpret correctly the distribution of bird-life.

Cape York, being at the extreme limit of Australia, has attracted considerable attention from ornithologists, as forms resembling New Guinea species are there largely represented. New Guinea has been the Aladdin's lamp of ornithologists for the last hundred years, the Birds of Paradise furnishing a magician's call.

Australian birds found at Cape York show relationships to these wonders, and hold out a lure to local investigators as well as to those from other parts of the world.

The earliest Australian land-bird that I at present trace to have been described is the Giant Kingfisher, a truly typical bird; this was figured and described by Sonnerat from "New Guinea." It does not occur in New Guinea, and the only conclusion seems to be that a captive bird had been transported from Australia by the blacks, a somewhat inadequate suggestion. I note this, as this bird, after a century and a half's search, has been found to live at Cape York, as will presently be mentioned.

Though it is probable that no collections were brought from Cape York by Captain Cook's party, we know that a Bustard was killed in south Queensland, and there is good reason to believe that they brought back from what is now called Cooktown a Parrot which was described by Latham as the Blue-cheeked Parrot. Latham's description, which was regarded as inexact by Salvadori, I found to agree exactly with specimens procured at Cooktown, and as it does not range otherwise than from Cape York to New South Wales, and the specimens differ so noticeably that Salvadori recognised the inapplicability of Latham's name to either the Cape York or New South Wales form, my suggestion seems reasonable.

Another bird which was described from New Holland at a very early date was the Great Black Cockatoo known as the Palm-Cockatoo. This, however, was named in literature prior to Captain Cook's time simply from "eastern seas," and Nova Hollandia was gratuitously added by Gmelin, who did not read carefully what Latham wrote. Latham added after his description, "This was taken from a drawing done by order of Governor Loten at Ceylon," and he then described a *different* form recorded by Parkinson as met with on the coast of New Holland. This latter was, of course, the Black Cockatoo known as Banksian Cockatoo. As a matter of fact the Palm-Cockatoo does inhabit Australia, having been discovered at Cape York by Macgillivray about sixty years after Gmelin's description was published. I designated as type-locality of Gmelin's species Salwatty, as that place was in touch with Europe at a very early date, and the bird is, or was, common there. My action has been questioned by one of the European ornithologists, who, only having knowledge of the fact that the bird occurred at Cape York, was desirous of rectifying my supposed error without investigating the history of the bird. This note may prevent the publication of more erroneous statements in connection with this bird, as such will certainly be made unless more care than usual is taken.

Gould did not visit Cape York, and the first naturalist who seems to have thoroughly investigated the avifauna of that district appears to have been John Macgillivray, when on board the 'Rattlesnake,' commanded by Capt. Owen Stanley, in 1846–50.

Jukes, on board the 'Fly,' while surveying Torres Straits, as well as his Commander, Ince, furnished more material to Gould, who obtained most of Macgillivray's specimens and notes. These provided the greater portion of Gould's 'Supplement.'

A prior investigator of north Queensland, whose collections were allowed to be submerged in the National Collection without study, was Matthew Flinders.

Since Macgillivray's time many collectors have touched at Cape York, each adding a bird or two to the avifauna, without any very startling results. Such are: Ramsay or his collector Broadbent, d'Albertis, Meek, Rogers, McLennan, Macgillivray, Masters, Barnard, Jardine, White, Kemp, and finally Cockerell and Thorpe. The last-named may be here first noted. These collectors, who must stand in the forefront of careful and accurate workers as regards the acquisition and preparation of bird-skins, thought that by the falsification of localities they might obtain better prices for their goods; they therefore made an expedition to some islands to the north of Australia, probably the Aru group, where they made a magnificent collection, and then palmed these off mixed with true Cape York birds as having been all procured at Cape York. This collection, purchased by Messrs. Godman and Salvin, and later presented to the British Museum, has been a source of endless trouble, and the only scientific course would have been to have rejected it entirely.

The other collectors named have added species after species to the Cape York fauna, so that it may reasonably be said to be well known. The latest collectors have each found little to add, McLennan's chief finds being a small subspecies of *Dacelo gigas* and a form of the New Guinea *Cracticus mentalis*. This latter Kemp again collected, while his most interesting discovery was the small Robin I have named *Kempiella kempi*.

The consideration of all these collections shows them to have a strong New Guinea element and to have no really remarkable forms; all the New Guinea species generally occur on the shores opposite, and the Cape York forms are slightly differentiated as subspecies only.

This is what one would anticipate when it is remembered that "a slight elevation of less than ten fathoms would now serve to connect the shores" of New Guinea and Cape York (Hedley, Proc. Linn. Soc. N.S.W. 1899, p. 396).

Hedley, speaking from practical experience, in the same place states "In the heart of a great Queensland scrub a naturalist could hardly say from his surroundings whether he were in New Guinea or Australia."

The majority of the Cape York birds occur at Cooktown, 400 miles south, and many still live at Cairns, 100 miles farther south. This remark refers to the New Guinea forms occurring at Cape York. Just south of Cairns there is a range of mountains called the Bellenden Ker, and this range has provided the startling novelties missing from the Cape York district. Thus *Prionodura newtoniana* and *Scenopoeetes dentirostris* are extraordinary members of the Bower-Bird family, being unique generic types elsewhere unknown. *Oreoscopus gutturalis,* another unique generic type, is probably related to *Sericornis.* Though probably having affinity with New Guinea forms, these are distinctly differentiated and do not occur at Cape York. Of course, in the Bellenden Ker district there also occur many well-marked subspecific forms, showing that it should be considered a distinct and characteristic faunal region.

The preceding review is necessary to disclose the new discovery that has been made, due to the enthusiasm of Dr. W. Macgillivray and his collector, J. McLennan.

The latter, when at Cape York collecting for Dr. Macgillivray, heard from the residents there of strange birds living farther south. He informed Dr. Macgillivray, and asked permission to be allowed to explore this locality, which had never been searched by previous collectors. Dr. Macgillivray willingly assented, and I agreed to share the expenses, though I must admit I did not anticipate any very novel results.

McLennan at once, however, sent two big Parrots, quite new to the Australian fauna, to Dr. Macgillivray, who sent one to me and named the other. These arrived just before I left England for Australia, and were included in the Introduction to my 'List of the Birds of Australia,' pp. xxv and xxvi, as *Geoffroyus geoffroyi maclennani* and *Eclectus pectoralis macgillivrayi,* both from the Pascoe River.

This river is only about a hundred and fifty miles south of Cape York, yet neither of these two birds lives there. They are both conspicuous birds and appear to be common in the locality, and the following note by Dr. Macgillivray ('Emu,' xiii. 1914, p. 196), who personally visited the place, is worthy of reproduction:—

"It is usually dry, and the whole place shows the effects of it, even the scrubs. Birds build their nests only to pull them to pieces again or to desert them. We have taken several nests of *Eclectus*, but cannot find that of *Pseudopsittacus* (= *Geoffroyus*). I have a Honey-eater, which is, I think, entirely new. It is small and lives in the midst of the scrubs.

"The other day, for a moment or two, I saw a bird like a Regent Bird, but it dived into the scrub and was gone.

"It will take a generation of field-naturalists to find out all the wealth of this district. There is another Parrot near here, but we have not come across it yet—a black one.

"*Pseudopsittacus* (= *Geoffroyus*) and *Eclectus* are calling now—one from the opposite side of the creek, where there is a nesting-tree, the other from a food-tree just below our camp. . . . Existence here is very pleasant, and it is glorious to walk in the morning and hear the multitudinous voices of the birds. The chorus was a babel at first, but the species are sorting themselves, and now our ears are becoming educated to their calls."

When I arrived in Australia I examined the collection with Dr. Macgillivray, and I have named the Honey-eater *Macgillivrayornis claudi*, and I also named a new Owl *Tyto galei*. I named a new subspecies of Finch, which added a genus and species to the Australian list, viz. *Erythrura trichroa*.

As a result the first collection made about the Pascoe and Claudie Rivers, contained *five* extraordinary birds, of which three were representatives of extralimital genera, one a new genus altogether, and the last quite a new species. The fact that these birds were comparatively common and also conspicuous entitles this discovery to rank as the most important one of recent times in connection with Australian ornithology. It is also quite unexpected, as Cape York had been so well worked, while Cooktown, Cairns, and the Bellenden Ker Range had been well attended to. Yet this region about the Claudie and Pascoe Rivers harbours a peculiar avifauna, only second in interest to that of the Bellenden Ker Range. Dr. Macgillivray, from personal investigation, prophesies that it will take a generation of field-naturalists to exhaust its treasures. No prophecy could now indicate the nature of the finds to be made, as no worker conversant with the New Guinea and Cape York avifauna could have guessed the wonders of the Claudie River region.

Ecological study of avifaunas will certainly prove the most fascinating pursuit of the "new ornithologists," as the mere collection of birds' eggs gives little satisfaction, and the field-naturalist is generally no wanton killer of bird-life. The study of such a fauna as is here suggested in connection with its environment would claim Dr. Macgillivray's adjective as a glorious one. The mere record of the bird-life, in conjunction with a study of the land, the forest, and the seasons, would force a perusal by the most casual bird-lover, and would conduce to suggestions from more serious students.

Thus Hedley has told us that the dense bush of Queensland is very similar to that of New Guinea. Here it harbours quite a similar avifauna, whereas at Cape York, nearer to New Guinea, a less remarkable though still a New Guinea-like bird congregation exists. In the Bellenden Ker Range the peculiar Bower Birds strike a new note, but here the New Guinea effect is also produced.

It must be obvious that there must be some reason for these different faunas, and I suggest that the solution may be found in the high land of the two more southern habitats. That is to say, as above quoted, a slight elevation would connect the shores of Torres Straits. A further depression would have flooded Cape York, but have left the high land around the Claudie River and the Bellenden Ker Range isolated as islands.

The faunas there existent would be preserved, while that of intervening lowlands would have been exterminated. The elevation to the present level would probably be heralded by a higher one, which, connecting the shores, admitted of a new immigration before it sank to the level now existent. This shifting up and down has been recognised by nearly all students of the Queensland fauna, and geological evidence confirms such conclusions. Such a theory would account for the presence of these island-faunas stranded in north Queensland, for according to observers the scrub about Cape York does not differ from that of Bellenden Ker, nor does Dr. Macgillivray note anything remarkable save new plants, which of course would be expected. The climatic conditions do not seem to be otherwise than normal in the two places.

It should be remarked that the genus *Casuarius*, mainly restricted to New Guinea and the islands thereabouts, has one representative in Australia. That is not found at Cape York, but occurs in the Bellenden Ker district, though in the lowlands there. This would seem to confirm my suggestion. Probably a detailed criticism of the avifaunas of the Cape York District, the Claudie River District (when it is available), and the Bellenden Ker District, in comparison with those from various parts of New Guinea, would lead us to some conclusive results. There can be no doubt that, ornithologically considered, New Guinea embraces at least three distinct avifaunas, though the majority of New Guinea collections have been reported upon by ornithologists, careless to the last degree of the lessons to be learnt by a study of birds. As a writer on another branch of zoology once commented :—" The excellence of a British ornithologist seems to be governed by the number of pages he fills, irrespective of the matter therein contained."

The majority of papers have been mere lists, repetitions of well-known names, without any conclusions drawn from them. Without such conclusions the preparation of such lists appears to be a waste of time, for surely no one should be better able to indicate the lessons than the worker who has studied the collection and handled the birds. The "new ornithology" will deal with bird collections in a different way, and already there are signs, showing the improvement in the treatment of bird-study.

I would here summarize the new discovery above treated of, so that the worker who is too busy to wade through the preceding can grasp the gist of this communication with the least possible trouble.

Cape York is the extreme north-east point of Australia, and is separated from New Guinea by shallow water. The avifauna of Cape York is well known, over a dozen collectors having worked there. The bird-life shows strong affinity with that of New Guinea, many typical New Guinea forms being found, usually separable only as subspecies. No peculiar genera exist.

The Bellenden Ker district has also been well worked, and the affinities of this district are with New Guinea, though it is five hundred and fifty miles away. Three peculiar well-marked genera have been recorded, marking a characteristic fauna, while the presence of *Casuarius* is noteworthy.

The first collection made at the Pascoe and Claudie Rivers, only some hundred and fifty miles south of Cape York, has revealed an avifauna with a marked New Guinea relationship, and already showing a peculiar genus. The birds so collected are remarkable for their size and conspicuous nature, two being Parrots, one of them very large. The discoverer believes that other new and large birds are still to be found. None of the novelties occurs in any other portion of Australia, and all are quite absent from Cape York.

I would account for this peculiar isolated avifauna by the suggestion of former depression of the extreme point of Cape York, and later elevation above its present level, and subsequent gradual subsidence. Such an hypothesis would also account for the Bellenden Ker avifauna, as the peculiar forms are mainly highland forms, and are probably related to other slightly distinct forms now inhabiting the highlands of New Guinea.

New Guinea, ornithologically speaking, covers three distinct avifaunas, and recent workers on New Guinea birds have failed to recognise this fact, though commonly recording facts endorsing this conclusion without recognising it.

III.—*The Crested Penguin* (Catarrhactes chrysocome *Forster*) *in Australian Waters.* By H. Stuart Dove, M.R.A.O.U.

Some four years ago, Dr. Brooke Nicholls, of Melbourne, Victoria, befriended a Crested Penguin which came ashore when he was staying with a camping party at Lorne, a pleasant watering-place on the south coast of Victoria. Some of the party were cray-fishing when they noticed the bird on some rocks at the water's edge; after watching it for some time, they returned to camp, and were surprised to find that the newcomer had followed them for several hundred yards, over rocks and sand. Placing him in a bag, they carried him to one of the houses where there was a large sea-bath, and in this, "Billy" (as he was christened) lived on and off for six weeks. During the first fortnight his plumage underwent a complete moult, after which he looked very handsome, the new crest being of a bright sulphur-yellow. While moulting, he would not enter the water. He soon became very tame, allowing the children to take him up and carry him from place to place; he would eat raw meat, but was fed mostly on fish, sometimes the freshwater minnows, sometimes sea-fish which were liberated in the bath and captured by him after an exciting chase.

Billy's fondness for fresh water was remarkable, his greatest delight being to go with the bathers to the shower-bath; the greater the force of the shower, the better he liked it. From time to time, he would stretch himself at full length on the floor, shuffling and squawking with pleasure as the water splashed upon him. Strange to say, when taken to the sea, he refused to enter the water, but made off home as fast as his feet would carry him He usually walked one foot after another but, when wishing to quicken his pace, would hop along. At length, he was persuaded to go with the bathers through the breakers, and once in deep water, he continued swimming oceanwards until eventually lost to sight.

Last summer, a gentleman with his family staying on another part of the south coast of Victoria, surprised a

Penguin of the same species on the shore, and tried to capture it, but it eluded pursuit and dashed into the water.

In September of last year (1913), a good example of *C. chrysocome* came ashore between the Mersey and Don rivers, not far from Devonport, Tasmania. This is the first Crested Penguin I have ever seen in the north of the Island, although two or three have been taken in the south, where one would naturally expect to see those which have strayed from the Antarctic Islands which are their home. The specimen in question was in splendid order, evidently only just deceased, and had escaped the battering of the reefs; stuffed and mounted, he forms a conspicuous addition to my collection of natural curiosities. He evidently had another moult to undergo before reaching maturity, the measurements and colouring not quite agreeing with those given by the authorities for an adult.

Sir W. Buller, 'Manual of Birds of New Zealand,' 1882, gives under *Eudyptes chrysocomus* Forst., the following:—"Crown, sides of head, throat, and hind part of neck black. ..... from base of upper mandible, on each side, a broad line of pale golden yellow passes over the eyes and is continued beyond in a crest of fine pointed feathers extending two inches beyond the head. Underparts, silvery white; upper, bluish black. Total length 27 inches; wing 8·5; beak 2·75; tarsus 1·5." Robert Hall, 'Key to the Birds of Australia,' 1906, gives under *Catarrhactes chrysocome* Forst.:—"General colour dark slate; crown black; longest crest-feather about 3·5 inches, the crest-feathers being yellow and black; forehead uniform black. Total length 25 inches. Young. Crest is indicated by a yellowish-white line; chin ashy-white." In my specimen I should describe the upper surface as a fine dark metallic blue, upper surface of wings the same, tail somewhat lighter blue; under surface silvery white, *except the throat and chin, which are ashy-white,* with a *small dark patch* a little below the base of beak. Sides of the head below the crest, a darkish grey; forehead, bluish grey. The wings above are of the same tint as the back; beneath, white, with broad patch of dark blue at the tips, the same at the base, extending somewhat on to body in front of wing; there is also a border of dark blue on the upper edge, but not extending to the tip. Beak dark red; feet reddish, webbed, with strong nails. The tail is long for a Penguin, and formed of stiff, narrow feathers. The crest is black, formed of fine pointed feathers, the pale yellow appearing only underneath, and beginning behind the eye.

Total length 24 inches; wing 6; tail 3; foot (on flat, with tarsus) 4·5; beak 2; crest 3.

It will be seen that the throat in the Devonport specimen differs considerably from that of the adult as described by Buller; a photograph of Dr. Nicholls' "Billy" after the moult shows a very black throat, that colour extending in a straight line to the sides of the neck. The very small amount of yellow in the crest of my bird is somewhat puzzling in an individual so close to maturity as its size denotes; it has occurred to me that this particular specimen may not be *C. chrysocome*, but possibly a new form. The thick, strong beak, which is its most noticeable feature, agrees well with Hall's description of that feature in *Catarrhactes*: "Bill moderately long and very stout, the culminicorn being divided from the latericorn by a deep groove, which is much swollen towards the base." G. M. Mathews, in his 'List of the Birds of Australia,' 1913, includes *Catarrhactes* with *Eudyptes*, thus considering *C. chrysocome* as identical with *E. pachyrhynchus*; according to Buller ('Manual of Birds of N. Z.') all the adult measurements (except the tarsus) of *E. pachyrhynchus* are greater than those of *E. chrysocomus* (= *C. chrysocome*). A. J. Campbell, 'Nests and Eggs of Australian Birds,' 1900, records that a Crested Penguin (*C. chrysocome*) was captured at King Island, Bass' Strait, in 1887; he has also recorded the species for West Australia (near Cape Leeuwin). In connection with the Devonport specimen, and that seen on the Victorian coast last summer, Dr. Nicholls speculates in a recent Melbourne 'Argus' as to whether the close approach of Antarctic bergs to our coasts may have brought these Penguins farther north than usual.

IV.—*Report on the Birds collected by the late Mr. Boyd Alexander (Rifle Brigade) during his last Expedition to Africa.*—Part II.* *The Birds of St. Thomas' Island.* By DAVID A. BANNERMAN, B.A., M.B.O.U., F.R.G.S.

IN the previous number of 'The Ibis' I published the first of a series of five papers dealing with the last collections formed by Boyd Alexander.

Following the same plan as I adopted when describing "The Birds of Prince's Island," I have included an excellent account of the island of St. Thomas from 'Boyd Alexander's Last Journey,' which his brother, Mr. Herbert Alexander, has kindly permitted me to make use of.

A complete list of the species of birds found on St. Thomas is given in the following pages, irrespective of whether Alexander obtained examples or not. An asterisk, attached to a species, signifies that the bird is represented in the Alexander collection, and in every case the specimens which he procured are enumerated.

I must again acknowledge the invaluable papers on the avifauna of the islands in the Gulf of Guinea published by Count Salvadori, which I have constantly consulted while working out the Alexander collections.

As in the case with Prince's Island, Count Salvadori has included in his paper a complete "Bibliography" of the literature dealing with St. Thomas up till 1902.

While working out the birds of this island, I have particularly made use of the following works :—

BOCAGE. Jorn. Sci. Lisboa, 1891, pp. 77–87; id. 1905, pp. 72–90.
SALVADORI. Mem. Accad. Sci. Torino, 1903 (Orn. Golfo d. Guinea, ii. pp. 17–45).
SHELLEY. Birds of Africa, vols. i.–v., 1896–1912.
REICHENOW. Vögel Afrikas, vols. i.–iii., 1900–1905.

In the first of these papers Prof. Bocage gives excellent notes on the nidification of the majority of the species with descriptions of the eggs, on the authority of Francisco Newton. Count Salvadori includes very few field-notes in his systematic treatise on the birds obtained by Signor Fea.

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* For Part I. see 'Ibis,' 1914, pp. 596–631.

Throughout the following pages I have quoted Count Salvadori's paper on the birds of St. Thomas, which appeared in the Mem. Acc. Sci. Torino, 1903, pp. 17–45, as "Salvadori, Orn. Golfo d. Guinea, ii."; also the paper published in 1905 by Professor Bocage, which is the most recent work on the birds of St. Thomas, and contains full references to previous writings. Wherever possible, I have given a reference to Shelley's 'Birds of Africa.'

All the islands in the Gulf of Guinea are rich in insular races, and St. Thomas is particularly favoured in this respect. The following species and subspecies are probably restricted entirely to St. Thomas:—

1. *Onycognathus fulgidus* Hartl.
2. *Oriolus crassirostris* Hartl..
3. *Hyphantornis grandis* Gould.
4. *Heterhyphantes sancti-thomæ* (Hartl.).
5. *Lagonosticta perreini thomensis* Sousa. [Doubtful.]
6. *Neospiza concolor* (Bocage).
7. *Linurgus rufobrunneus thomensis* (Bocage).
8. *Cinnyris newtoni* (Bocage).
9. *Elæocerthia thomensis* (Bocage).
10. *Speirops lugubris* (Hartl.).
11. *Zosterops ficedulina feæ* Salvad.
12. *Lanius newtoni* (Bocage).
13. *Prinia molleri* Bocage.
14. *Turdus olivaceofuscus* Hartl.
15. *Amaurocichla bocagei* Sharpe.
16. *Terpsiphone atrochalybea* (Thoms.).
17. *Chætura thomensis* Hartert.
18. *Corythornis thomensis* Salvad.
19. *Flammea flammea thomensis* (Hartl.).
20. *Vinago sancti-thomæ* (Gmel.).
21. *Columba thomensis* Bocage.
22. *Haplopelia simplex* (Hartl.).

Boyd Alexander's collection is a very representative one, including most of the more interesting forms to be found on the island. No new species, however, were discovered, St. Thomas having been visited in 1900 by Signor Fea, who appears to have made a very complete survey of the island.

Special mention must be made of the rare Owl *Flammea flammea thomensis,* of which the Alexander collection possesses four fine examples obtained by José Lopez—Alexander's Portuguese collector—at Zalma. This Owl has not hitherto been represented in the British Museum collection.

Mr. Ogilvie-Grant, to whom I tender my sincere thanks, has been good enough to look through the proof-sheets of this paper. I am also deeply indebted to Mr. G. C. Robson, of the British Museum, for his aid in translating the Italian papers which it has been necessary to consult throughout this work.

The following account of St. Thomas has been pieced together from Alexander's last diary, to which allusion has already been made. It gives a very good idea of the conditions under which the collections were formed, and adds not a little to our knowledge of this small island, which has recently been so much in the public eye.

Boyd Alexander's Description of St. Thomas' Island.

About 11.30 on January the 18th, the Ilha das Cabras came into sight. The Peak of São Thomé was not visible, but the whole island has a mountainous appearance and is well wooded. We stayed at the port [São Thomé village] on the 19th to get things ready for a journey to the Peak, and the following day left for Monte Café, a large roça about 1900 feet up, on the road to São Thomé Peak. A little more than half way is the village of Trinidade; another two hours from here brought us to Monte Café. Above Monte Café the ground still rises to some 5000 feet, forming the crest-line which is seen from the port, and only at times is the top of the Peak of São Thomé just visible. Our first day's collecting did not produce much, but I got a pretty good idea of what was to be found, and I am afraid that it is doubtful if we shall get anything new. There is much cultivation even on the steep slopes of the hills, and practically there is very little of the virgin forest left. It is a wonderfully rich island. The soil is of a brownish red, and is capable of producing anything. The whole way up from the port to Monte Café are great cocoa-plantations, while clumps of banana-trees, scattered palms, and tall forest-trees give a wealth of verdure to the scenery. Towards 3 o'clock the sky becomes overcast from the north, and occasional showers fall. The manager of Monte Café . . . has promised two mules for to-morrow, when we move our camp still higher up, to Lake Amelia, where there is a good deal of virgin forest. We made an early start on the 22nd, and arrived at a collection of huts near Lake Amelia about 9.30. It is a steep "pull up" to this point, and almost an hour from Monte Café we entered thick forest with long-leaved plants forming part of the undergrowth. There were also gigantic cotton-trees, most of which present a weird appearance, for the cold damp atmosphere has hung their branches with lank lichen-growth that streams in the breeze like tresses of hair. Lake Amelia lies at nearly 5000 feet in altitude. It is about two hundred yards in circumference, and has the appearance of having been a crater. Its formation is a deep bed, and the sides are clothed with thin-stemmed trees rising in tiers. There is no water now, but only thick bog. At this altitude large clumps of bamboo are to be found; the coffee-tree does not seem to flourish, while the picturesque quinine-tree is in evidence.

We stayed and collected here from January the 23rd to the 26th, José always taking a different direction to mine. The forest-growth, which at first looked so promising, yielding no Ground-Thrushes such as *Alethe, Callene,* and *Turdinus.* These localities were particularly silent, and we obtained nothing more than what is in Salvadori's list. There seemed to be quite an absence of insect-life, and hardly an ant was to be seen.

On more than one occasion I got to within 500 feet of the Peak—that is to say, on a level with the eye from neighbouring ridges,—and I have my doubts whether it will be worth while to ascend it. The hill is not extensive enough, and not high enough, for the growth to alter. It is covered right up to its summit with the same forest-trees that are to be found on the neighbouring hills, and one can hardly expect the fauna to be different, as it was in the case of the Peak of Fernando Po. It is a difficult country to work; the valleys, full of thick wood and tangle, are extraordinarily deep, and many are quite impossible to descend into, while water in the dry season is not plentiful. There has not been much rain, but generally towards 6 o'clock a dense cold mist from the south drives over the hills in thick clouds. It is very depressing, coming over in a moment of time, enveloping everything and blurring the trees to phantoms. Very often at sunset there are some fine colour-effects, and on the 25th there was a particularly impressive one. Looking southward from my camp, a lofty ridge of wooded hills, jagged in outline, stood out in clear contrast to a thick layer of cumulus clouds directly behind, that had shaped itself into the form of rugged hills and peaks, looking for all the world like snow-capped mountains against the wooded chain in the foreground, and this was further brought out into contrast by a dark leaden sky above.

Many of the smaller hills are cultivated, in places even the lower slopes of the Peak itself, giving the impression that every available bit of ground in this rich island is seized upon and made the most of.

The interior of the island has a peculiar geographical aspect; one looks down into a large and deep crater, which practically forms the very centre of the island. Here the wealth of St. Thomas becomes apparent, for it has a very fertile aspect, with the foliage of the cocoa-plantations, the coffee-trees, and the big clumps of bananas.

José is working very well, and his skins have good form. We have also been lucky in the weather—bright sunny mornings, as a rule.

On January 26 we left for the port [São Thomé village]. The weather here is still fine, in spite of its being the rainy season. A pleasant breeze always gets up from the south-east about 10 o'clock and blows till about 4 o'clock. Our collections from the hills number fifty specimens in all.

On the 4th of February José left with the carriers for Zalma, a place about one and a half hours' walk south from here, where he is going to collect. In that neighbourhood the ground is chiefly owned by the São Thomé natives. They are a poor people; all the good land has been taken from them, and they now only possess small plots of maize near the coast. José has a good camp, and I go out every day to see him and shoot on the way.

On February the 12th José arrived in from his camp: he had something like forty-five specimens, including four examples of the rare Owl, *Flammea flammea thomensis*; but I do not think there is anything new, unless it is one of the Ground-Pigeons* (*Haplopelia*). The same day we left about 12.30 in the s s. 'Tonga' for Annobon, which gave me the opportunity of seeing the whole of the western coast of St. Thomas. The island presents a mountainous and rugged appearance, and some of the peaks are very remarkable in their shape, especially the Dog Peak. It is like a gigantic obelisk, so regular in its contour that it is difficult to realise Nature alone has carved it.

Systematic List.

1. **Onycognathus fulgidus.**

Onycognathus fulgidus Hartl.; Salvadori, Orn. Golfo d. Guinea, ii. 1903, p. 31; Bocage, Jorn. Sci. Lisboa, 1905, p. 78; Shelley, Birds of Africa, v. 1906, p. 97.

This Starling is confined to St. Thomas, where it is said to be exceedingly abundant.

Curiously enough, Alexander did not obtain a single specimen.

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* None of the Ground-Pigeons obtained by Alexander proved to be new to science. One species only was represented on St. Thomas, *Haplopelia simplex* (Hartl.), of which a large series was procured.

2. ***Oriolus crassirostris.**

Oriolus crassirostris Hartl.; Salvadori, Orn. Golfo d. Guinea, ii. 1903, p. 30; Bocage, Jorn. Sci. Lisboa, 1905, p. 77; Shelley, Birds of Africa, v. 1906, p. 21, pl. xliii.

a. ? Imm. (No. 23). Lake Amelia. 23.i.09.

b–e. ♂ ♂ ♂ ♀ ad. (Nos. 18, 21, 22, 20). Lake Amelia. 24.i.09.

f. ♂ ad. (No. 19). Lake Amelia. 25.i.09.

Iris red, bill pale claret-red.

A very good plate of this Oriole is given by Shelley in which both the adult and immature birds are figured.

In the series obtained by Alexander an apparently adult female differs from the male only in having the upper part of the breast and throat greyish, mottled with black and white on the upper part of the throat and chin. In the male these parts are uniform black, and in the immature bird white.

All the specimens enumerated agree exactly with Shelley's plate, with the exception of No. 19. This example is remarkable, as it resembles the fully adult male in plumage, but has a wide yellowish-grey patch on the crown of the head, extending from the base of the bill to the hind part of the crown, a distance of 26 mm. The rest of the head and neck is black.

The Stout-billed Black-headed Oriole is confined to St. Thomas, where it is stated by both Bocage and Fea to be very abundant throughout the island.

Alexander found it in the forests of the higher altitudes. He remarks that its note is a clear double whistle, and that it was breeding at the time of his visit.

3. ***Vidua principalis.**

Vidua principalis (Linn.); Salvadori, Orn. Golfo d. Guinea, ii. 1903, p. 29; Bocage, Jorn. Sci. Lisboa, 1905, p. 82.

Vidua serena Linn.; Shelley, Birds of Africa, iv. 1905, p. 16.

a. ♂ ad. (No. 4).	Monte Café.	20. i. 09.
b, c. ♂ ♂ ad. (Nos. 38, 39).	Lake Amelia.	25. i. 09.
d. ♂ ad. (No. 127).	Zalma.	4. ii. 09.

The White-breasted Whydah is said by Newton to be very plentiful on the island of St. Thomas. It is not found on Prince's Island or Annobon, but Alexander obtained it on Fernando Po.

In Africa it is very generally distributed.

In St. Thomas Alexander found it common on the hills near Monte Café. All the specimens obtained were in breeding plumage.

4. *Steganura paradisea.

Steganura paradisea (Linn.); Salvadori, Orn. Golfo d. Guinea, ii. 1903, p. 30; Bocage, Jorn. Sci. Lisboa, 1905, p. 82.

Vidua paradisea Shelley, Birds of Africa, iv. 1905, p. 25.

a. ♂ ad. (No. 128). Zalma. 4. ii. 09.

The single example of the Paradise Whydah, obtained by Alexander, is in full breeding-plumage.

Shelley gives the range of this species as "Africa generally south of 17° N. lat.," and notes that "the only specimen recorded from St. Thomas was probably a cage-bird." The example which Alexander obtained shows no sign of having been in captivity, and is, in fact, a particularly fine specimen in beautiful plumage. It seems probable that if *S. paradisea* is not a genuine inhabitant of St. Thomas it may occasionally wander there from the mainland. It is not found in Fernando Po.

5. *Pyromelana flammiceps.

Pyromelana flammiceps Swains.; Bocage, Jorn. Sci. Lisboa, 1905, p. 38; Shelley, Birds of Africa, iv. 1905, p. 104.

a. ♂ ad. (No. 73).	Near São Thomé.	31. i. 09.
b, c. ♂ ♂ ad. (Nos. 69, 70).	,, ,, ,,	1. ii. 09.
d. ♂ ad. (No. 72).	,, ,, ,,	2. ii. 09.
e. ♂ ad. (No. 129).	Zalma.	7. ii. 09.

The Fire-crowned Bishop-bird has been obtained in

St. Thomas since 1893. Before that date the bird does not appear to have been taken on the island. It is probably very locally distributed, as Signor Fea in 1900 failed to obtain specimens.

Boyd Alexander remarked that this species was not numerous near São Thomé and was to be found frequenting waste land.

6. *Pyromelana aurea.

Pyromelana aurea (Gmel.) ; Shelley, Ibis, 1886, p. 354, pl. ix. fig. 2 ; id. Birds of Africa, iv. 1905, p. 79 ; Salvadori, Orn. Golfo d. Guinea, ii. 1903, p. 30 ; Bocage, Jorn. Sci. Lisboa, 1905, p. 82.

a, b. ♂ ♂ ad. (Nos. 81, 82). Zalma. 1. ii. 09.
c. ♂ ad. (No. 113). ,, 7. ii. 09.
d, e. ♂ ♂ ad. (Nos. 111, 112). ,, 10. ii. 09.

The Golden-backed Bishop-bird is apparently very plentiful on the island of St. Thomas. The series obtained by Alexander are all males in beautiful breeding-plumage. It is remarkable that, though males are frequently obtained, the females are rarely met with. In fact, up till 1912, when Mr. Willoughby P. Lowe obtained a single female of this species at St. Paul de Loanda, I am not aware that an example had ever been secured. The female which Mr. Lowe collected I described in 'The Ibis,' 1912, p. 232.

Very little is known with regard to the range of this species. St. Thomas is the only island in the Gulf of Guinea upon which it is to be found. The type is supposed to have come from Benguela. Single specimens have also been obtained from Gaboon, the Quanza River, and St. Paul de Loanda. St. Thomas would appear to be the true home of *P. aurea*, where, however, Alexander writes "It is not common, frequenting marshland and the vicinity of plantations."

7. *Quelea erythrops.

Quelea erythrops (Hartl.) ; Salvadori, Orn. Golfo d. Guinea, ii. 1903, p. 29 ; Bocage, Jorn. Sci. Lisboa, 1905, p. 81 ; Shelley, Birds of Africa, iv. 1905, p. 117.

a. ♂ ad. (No. 5). Monte Café. 20.i.09.

Iris brown; bill blackish horn-colour; legs and feet brownish flesh-colour.

St. Thomas is the type locality of the Dark-throated Red-headed Dioch, where it is said to be abundant. It has an extensive range on the mainland.

Alexander found it frequenting the maize-plots on the hill.

8. *Spermestes cucullata.

Spermestes cucullata Swains.; Salvadori, Orn. Golfo d. Guinea, ii. 1903, p. 29; Bocage, Jorn. Sci. Lisboa, 1905, p. 82; Shelley, Birds of Africa, iv. 1905, p. 167.

a. ♀ ad. (No. 79). Near São Thomé. 1.ii.09.
b. ♂ juv. (No. 125). Zalma. 5.ii.09.

Alexander found Swainson's Bronze-Mannikin common on St. Thomas. It was breeding at the time of his visit.

9. Lagonosticta perreini thomensis.

Lagonosticta thomensis Sousa; Salvadori, Orn. Golfo d. Guinea, i. 1903, p. 28; Bocage, Jorn. Sci. Lisboa, 1905, p. 81.

Estrilda perreini thomensis Shelley, Birds of Africa, iv. 1905, p. 219.

According to Count Salvadori this little Weaver-Finch is very closely allied to *L. incana* and by some considered only as a variety.

Shelley considered it to be a subspecies of *L. perreini* and scarcely recognisable, while Reichenow believed it to be a distinct species!

It appears to be doubtful whether the bird described by Sousa as *E. thomensis* ever inhabited St. Thomas. The type is said to have been obtained there by Moller in 1885, but Shelley points out that no mention is made of the specimen in the list of his collection published in 1887.

A second specimen was obtained according to Shelley at Guadalupe, which is apparently a village on the coast of St. Thomas, but, as Shelley remarks, it is by no means impossible for a single bird to have strayed across from the mainland.

The type is said to be preserved in the Coimbra Museum.

Apart from these two specimens, no other examples have ever been met with on the island of St. Thomas, and until further evidence is forthcoming we may safely assume that it no longer exists as a resident form.

10. *Estrilda astrild sousæ.

Estrilda astrild sousæ Reichw. Vög. Afrikas, iii. 1904, p. 182.

Estrilda astrild (Linn.); Salvadori, Orn. Golfo d. Guinea, ii. 1903, p. 28.

Estrilda occidentalis sousæ Shelley, Birds of Africa, iv. 1905, p. 200.

Estrilda astrilda Bocage, Jorn. Sci. Lisboa, 1905, p. 81.

a. ♂ ad. (No. 126). Zalma. 6. ii. 09.

My remarks on this subspecies will be found in my recent paper on "The Birds of Prince's Island," published in the last number of 'The Ibis' (p. 607).

Unfortunately only the one specimen cited above was obtained, and I am unable therefore to express any opinion as to whether this subspecies is valid.

I cannot determine the status of Sousa's Waxbill on St. Thomas, for no field-notes are supplied by Alexander. Newton found them "not rare," and was of opinion that they had been introduced.

11. *Heterhyphantes sancti-thomæ.

Heterhyphantes sancti-thomæ (Hartl.); Salvadori, Orn. Golfo d. Guinea, ii. 1903, p. 28; Bocage, Jorn. Sci. Lisboa, 1905, p. 80.

Sharpia sancti-thomæ Shelley, Birds of Africa, iv. 1905, p. 335.

a. ♂ ad. (No. 6).	Monte Café.	20. i. 09.
b. ♂ ad. (No. 15).	" "	22. i. 09.
c. ♂ ad. (No. 46).	Lake Amelia.	23. i. 09.
d, e. ♀ ♀ ad. (Nos. 44, 47).	" "	24. i. 09.
f. ♀ ad. (No. 45).	" "	25. i. 09.
g. ♀ imm. (No. 33).	Zalma.	5. ii. 09.

Iris brown; upper mandible brownish horn-colour, lower mandible pale horn; legs and feet pale flesh-colour.

The St. Thomas Weaver-bird is restricted to the island after which it is named.

The young female (No. 33) which Alexander obtained differs from the adult in lacking the black on the head and crown and the rufous yellow on the sides of the neck, the plumage of the entire upper parts being dull brown shading into rust-colour on the upper tail-coverts, the throat white and the underparts whitish, washed with pale rust-brown. The bill is similarly coloured to the adult.

Alexander has supplied the following note on this species:—"Frequents the wooded portions of the hills. It is much addicted to running up the branches in search of insects, after the manner of a Woodpecker."

12. *Hyphantornis grandis.

Hyphantornis grandis Gould; Salvadori, Orn. Golfo d. Guinea, iv. 1903, p. 27; Bocage, Jorn. Sci. Lisboa, 1905, p. 80; Shelley, Birds of Africa, iv. 1905, p. 430.

a. ♂ ad. (No. 17).	Rio Grande.	27. i. 09.
b. ♀ ad. (No. 132).	Zalma.	4. ii. 09.
c. ♀ ad. (No. 92).	„	4. ii. 09.
d. ♀ ad. (No. 91).	„	7. ii. 09.
e. ♀ ad. (No. 93).	„	8. ii. 09.

The Great Black-headed Weaver-bird is very abundant on St. Thomas, to which island it is restricted. Alexander notes that it is found in the vicinity of the cocoa-plantations on the lower ground.

The specimens collected call for no special remark.

13. Hyphantornis capitalis.

Hyphantornis capitalis (Lath.); Salvadori, Orn. Golfo d. Guinea, ii. 1903, p. 27; Shelley, Birds of Africa, iv. 1905, p. 438.

Apparently there is some doubt as to whether this Weaver-bird is actually an inhabitant of St. Thomas. Bocage referred a specimen which he obtained from St. Thomas to this species in 1861, but omitted the species from his last paper (1905). Since that date no example has been obtained, and none of the ornithologists who have visited the island in recent years mention having seen it.

It may therefore be inferred that if the specimen in the Lisbon Museum is really referable to this species it must have been a chance straggler to the island.

H. capitalis is an inhabitant of the Niger district.

14. *Serinus hartlaubi.

Serinus hartlaubi (Bolle); Shelley, Birds of Africa, iii. 1902, p. 197, pl. xxv. fig. 1.

Serinus icterus (Vieill.); Salvadori, Orn. Golfo d. Guinea, ii. 1903, p. 26; Bocage, Jorn. Sci. Lisboa, 1905, p. 80.

a, *b*. ♂ ad. et ♂ imm. (Nos. 88, 89). São Thomé. 23. ii. 09.

The chin in specimen No. 89 is pure white, while in the other example it is canary-yellow; apparently the white chin is a sign of immaturity.

Serinus hartlaubi has a wide distribution on the west coast, where it is abundant.

Count Salvadori considers it not improbable that it was introduced into St. Thomas, as it has been into St. Helena.

15. *Linurgus rufobrunneus thomensis.

Linurgus thomensis (Bocage); Shelley, Birds of Africa, iii. 1902, p. 173; Salvadori, Orn. Golfo d. Guinea, ii. 1903, p. 25; Bocage, Jorn. Sci. Lisboa, 1905, p. 79.

a. ♀ ad. (No. 16). Monte Café. 22. i. 09.

b. ♂ ad. (No. 14). Lake Amelia. 23. i. 09.

c–e. ♂ ♀ ♀ ad. (Nos. 80, 75, 78). Near São Thomé. 31. i. 09.

This is another of the many subspecies confined to the island. In Prince's Island its place is taken by the closely allied species *L. rufobrunneus*.

Alexander remarks that it is not common. It is found on the higher ground. Its note is a musical pipe.

16. Neospiza concolor.

Neospiza concolor (Bocage); Salvadori, Orn. Golfo d. Guinea, ii. 1903, p. 26; Bocage, Jorn. Sci. Lisboa, 1905, p. 80.

Not obtained by Alexander.

Count Salvadori has proposed the generic name *Neospiza* for this species, instead of placing it, as has been done by former writers, in the genus *Amblyospiza*.

This Weaver-Finch is restricted to the island of St. Thomas.

17. *Cinnyris newtoni.

Cyanomitra newtoni (Bocage); Shelley, Birds of Africa, ii. 1900, p. 134, pl. v. fig. 1.

Cinnyris newtoni Salvadori, Orn. Golfo d. Guinea, ii. 1903, p. 22; Bocage, Jorn. Sci. Lisboa, 1905, p. 75.

a–d. ♂ ad. (Nos. 40–43). Lake Amelia. 25. i. 09.

The St. Thomas Yellow-breasted Sunbird is also confined to the island, where, according to Alexander, it is generally distributed.

Curiously enough, all the examples collected proved to be males, in adult plumage.

This species was hitherto represented in the British Museum by three specimens only, one of which is said to be a female, although, as Shelley remarked, it looks uncommonly like an immature male. This bird is fully described in Shelley's 'Birds of Africa.'

18. *Elæocerthia thomensis.

Elæocerthia thomensis (Bocage); Shelley, Birds of Africa, ii. 1900, p. 119, pl. v. fig. 2; Salvadori, Orn. Golfo d. Guinea, ii. 1903, p. 22; Bocage, Jorn. Sci. Lisboa, 1905, p. 75.

a. ♂ ad. (No. 31). Lake Amelia. 24. i. 09.
b, c. ♂ ♀ ad. (Nos. 32, 33). ,, ,, 25. i. 09.

This fine Sunbird is confined to the island of St. Thomas, and the three beautiful skins which Alexander obtained are a welcome addition to the National Collection. The species was hitherto represented by the type and one other specimen.

The plumage of the sexes is alike. Shelley placed this species in the genus *Elæocerthia,* on account of the metallic colours being confined to the extreme ends of the feathers. It is, however, the only member of the genus which has a graduated tail—in all the others the tail is square, as in *E. verreauxi.*

Alexander notes that *E. thomensis* is not common and is found in thick wood.

19. *Zosterops ficedulina feæ.

Zosterops feæ Salvadori, Bull. Mus. Tor. 1901, no. 414, p. 1; Salvadori, Orn. Golfo d. Guinea, ii. 1903, p. 23; Bocage, Jorn. Sci. Lisboa, 1905, p. 77.

a, b. ♂ ♀ ad. (Nos. 114, 115). Zalma. 5. ii. 09.
c. ♀ ad. (No. 116). „ 8. ii. 09.

The White-eye of St. Thomas has been described by Count Salvadori in the paper cited above.

It differs from *Zosterops ficedulina,* which is the form peculiar to Prince's Island, in being much darker on the underparts and more greyish green on the upperparts; the crown of the head is much brighter, and the bill is yellowish horn-colour, tipped with dark horn. In size there is not much difference between the two island forms. Both are very distinct from the Annobon species.

Shelley in his 'Birds of Africa,' vol. ii. p. 186, mentioned that the Lisbon Museum contained a specimen of a *Zosterops* said to have been obtained on St. Thomas in 1880. As no form of White-eye was known at that time to inhabit St. Thomas, Shelley wrongly concluded that the specimen had probably come from Prince's Island or Annobon.

No doubt the specimen was correctly labelled. *Z. f. feæ* could not possibly be confused with *Z. griseovirescens* from Annobon, the latter being a much larger bird and a very well-marked species.

Fea notes that this subspecies has the same habits as *Speirops lugubris.*

20. *Speirops lugubris.

Speirops lugubris (Hartl.); Shelley, Birds of Africa, ii. 1900, p. 201; Salvadori, Orn. Golfo d. Guinea, ii. 1903, p. 23.

Zosterops lugubris Bocage, Jorn. Sci. Lisboa, 1905, p. 77.

a, b. ♂ ♀ ad. (Nos. 48, 49). Monte Café. 21.i.09.

c–f. ♂ ♂ ad. (Nos. 13, 50, 51, 52). Lake Amelia. 23.i.09.

The Brown White-eye, the sexes of which are alike, is confined to the island of St. Thomas, where it is apparently very plentiful.

Alexander obtained a series of beautiful skins. He notes that it is very common and generally to be seen in small parties. It has a pretty song, not unlike that of the Blackcap. In the early mornings the valleys are full of them singing.

Fea remarks that it is usually found in flocks. It frequents shady spots and during its short flights it emits a loud plaintive note.

21. Lanius newtoni.

Lanius newtoni (Bocage); Salvadori, Orn. Golfo d. Guinea, ii. 1903, p. 22; O.-Grant, Nov. Zool. ix. 1902, p. 467.

Fiscus newtonii Bocage, Jorn. Sci. Lisboa, 1905, p. 76.

Boyd Alexander did not obtain an example of this Shrike, which is apparently peculiar to St. Thomas.

22. *Prinia molleri.

Prinia molleri Bocage; Salvadori, Orn. Golfo d. Guinea, ii. 1903, p. 24; Bocage, Jorn. Sci. Lisboa, 1905, p. 78.

a. ♂ ad. (No. 58).	Lake Amelia.	25.i.09.
b. ♂ ad. (No. 123).	Zalma.	5.ii.09.
c. ♂ ad. (No. 124).	,,	6.ii.09.

Apparently confined to St. Thomas.

Fea remarks: "This bird has a monotonous note, but its movements are full of grace. It is very lively and always on the move. It produces a rattling noise made by the beating of its wings, like the scraping of a shovel."

Alexander found it well distributed over the island. The male when courting the female makes loud wing-beats, like the first patter of heavy rain on foliage, at the same time it will often perform a characteristic flight, a series of 'ups and downs' in the air like a switch-back motion.

23. *Turdus olivaceofuscus.

Turdus olivaceofuscus Hartl.; Salvadori, Orn. Golfo d. Guinea, ii. 1903, p. 25; Bocage, Jorn. Sci. Lisboa, 1905, p. 78.

a, b. ♂ ♀ imm. (Nos. 10, 24).	Lake Amelia.	23. i. 09.
c, d. ♂ ♀ ad. (Nos. 12, 26).	„ „	24. i. 09.
e. ♂ imm. (No 25).	„ „	25. i. 09.

The St. Thomas Thrush, which is peculiar to the island, is said by Francisco Newton to be common and universally distributed.

The figure given of this species in Seebohm's 'Monograph of the Thrushes' does not convey a correct idea of the bird. The feathers of the throat and belly are white narrowly tipped with pale brown. This has already been pointed out by Count Salvadori.

24. Amaurocichla bocagei.

Amaurocichla bocagei Sharpe, P. Z. S. 1892, p. 227, pl. xx. fig. 1; Salvadori, Orn. Golfo d. Guinea, ii. 1903, p. 25; Bocage, Jorn. Sci. Lisboa, 1905, p. 79.

Neither Alexander nor Fea appear to have seen this bird during their visits to the island.

The type-specimen, which is in the British Museum, was sent for comparison to the late Dr. Sharpe by his friend Barboza du Bocage, who had received it from Francisco Newton.

Sharpe gives a good figure of the bird and created for it a new genus, *Amaurocichla,* which he characterised as follows:—"Similar to *Crateroscelis*, but distinguished by the shape of the wing, the first primary being nearly as long as the second. Additional characters are: The bill is as long as the head, and rictal bristles are absent, while the tail-feathers are somewhat acuminate."

The type specimen was obtained at São Miguel, on the west coast of St. Thomas.

In the Lisbon Museum there are two more specimens of this rare species, apparently both males.

25. *Terpsiphone atrochalybea.

Terpsiphone atrochalybea (Thoms.); Salvadori, Orn. Golfo d. Guinea, ii. 1903, p. 21; Bocage, Jorn. Sci. Lisboa, 1905, p. 76.

a. ♂	(No. 11).	Lake Amelia.	23. i. 09.
b. ♀	(No. 108).	Zalma.	5. ii. 09.
c. ♀	(No. 108).	,,	8. ii. 09.

Thomson originally described *T. atrochalybea* (Ann. Nat. Hist. x. 1842, p. 204) from Fernando Po, but it would appear that the bird is only an accidental straggler to that island or more likely that the locality is erroneous. *T. atrochalybea* has not again been met with in Fernando Po, although the island has been well explored by ornithologists. It is probable that the type-specimen came from St. Thomas, and that the species is restricted to that island.

Alexander has the following notes in regard to this species:—"Frequents the cocoa-plantations and forest-growth. The alarm-note is a scolding 'tiz.' It is now breeding (23. i. 09). It makes a neat compact nest, cup-shaped and composed of the long tree-lichen which hangs from the branches in the forest; the interior is composed of fine fibre. The eggs are white, marked at the larger end with rusty spots."

26. Hirundo rustica.

Hirundo rustica Linn.; Salvadori, Orn. Golfo d. Guinea, ii. 1903, p. 21; Bocage, Jorn. Sci. Lisboa, 1905, p. 76.

A single record of the Swallow having appeared in St. Thomas is given by Moller (*cf.* L. Viera, Instituto J. Sci. e Lit. Coimbra, xi. 1887, p. 2).

27. ***Chrysococcyx smaragdineus.**

Chrysococcyx smaragdineus (Swains.); Salvadori, Orn. Golfo d. Guinea, ii. 1903, p. 35; Bocage, Jorn. Sci. Lisboa, 1905, p. 35.

a. ♂ ad. (No. 7). Monte Café. 20.i.09.
b. ♂ ad. (No. 90). Zalma. 10.ii.09.

The Emerald Cuckoo was first obtained in St. Thomas by Weiss in 1847; it does not appear to have been procured again until Alexander visited the island and shot the two specimens recorded above; he remarks that they frequented the high trees at Monte Café, with which the hillside was scattered. *C. smaragdineus* is probably a very rare species in the island.

28. ***Micropus affinis.**

Cypselus affinis (Gray); Salvadori, Orn. Golfo d. Guinea, ii. 1903, p. 31; Bocage, Jorn. Sci. Lisboa, 1905, p. 75.

a, *b*. ♀ ♀ ad. (Nos. 56, 57). São Thomé. 28.i.09.
c. Unlabelled specimen.

This widely distributed Swift is according to Fea "not rare on the island of St. Thomas."

29. **Chætura thomensis.**

Chætura thomensis Hartert, Bull. B. O. C. x. 1900, p. 53; id. Nov. Zool. viii. 1901, p. 425, pl. vii. fig. 1; Salvadori, Orn. Golfo d. Guinea, ii. 1903, p. 31; Bocage, Jorn. Sci. Lisboa, 1905, p. 75.

a. ♂ ad. (No. 53). Monte Café. 21.i.09.
b. ♂ ad. (No. 74). Near São Thomé. 31.i.09.
c. ♀ ad. (No. 131). Zalma. 5.ii.09.

This Swift is apparently confined to St. Thomas.

Alexander remarks that it is "fairly common in the higher altitudes."

30. **Coracias garrula.**

Coracias garrula Linn.; Salvadori, Orn Golfo d. Guinea, ii. 1903, p. 33; Bocage, Jorn. Sci. Lisboa, 1905, p. 73.

Evidently a straggler to the island, the Roller has been taken once in St. Thomas by Weiss, and the specimen is said by Count Salvadori to be in the Hamburg Museum.

31. Halcyon dryas.

Halcyon dryas Hartl.: Salvadori, Orn. Golfo d. Guinea, ii. 1903, p. 32; Bocage, Jorn. Sci. Lisboa, 1905, p. 73.

This Wood-Kingfisher, so common in Prince's Island, is, judging from the number of times it has been obtained, of very rare occurrence in St. Thomas. There is a single example in the British Museum from that island, and, according to Salvadori, the Lisbon Museum possesses a skin obtained there by Francisco Newton many years ago.

32. *Corythornis thomensis.

Corythornis thomensis Salvadori, Ibis, 1902, p. 568, pl. xiii.; id. Orn. Golfo d. Guinea, ii. 1903, p. 32; Bocage, Jorn. Sci. Lisboa, 1905, p. 74.

a. ♂ ad. (No. 35).	Rio Grande.	27. i. 09.
b. ♂ imm. (No. 36).	,, ,,	,,
c. ♂ imm. (No. 37).	,, ,,	,,
d. ♀ ad. (No. 34).	,, ,,	,,
e. ♀ ad. (No. 54).	,, ,,	28. i. 09.
f. ♂ ad. (No. 119).	Zalma.	5. ii. 09.
g. ♂ ad. (No. 118).	,,	7. ii. 09.
h. ♂ ad. (No. 117).	,,	7. ii. 09.

C. thomensis is a very distinct form, first described by Count Salvadori. From *Corythornis galerita* he distinguished it as follows:—

"*Corythornis, C. galeritæ* similis, sed gastræo castaneo, loris nigris, regione malari castanea paulum nigro tincta, tæniisque transversis pilei cæruleo-viridibus, seu malachitaceis, diversa.

"Long. tot. mm. 145–147; al. 59; caud. 28; rostri culm. 32.

"*Av. junior.* Regione malari, loris, capitis lateribus, pectore medio ejusque lateribus fusco-nigris; dorso maculis cæruleo-malachitaceis notato; rostro nigro."

Alexander having obtained a series of both forms from St. Thomas and Prince's Island, I have had an opportunity of closely comparing the two races.

It is noticeable that the blue colouring of the back in *C. galerita* is very different, being less bright and of a more purplish blue than in *C. thomensis*.

Moreover, the underparts are much deeper chestnut in the St. Thomas bird and lack the whitish belly of *C. galerita*. A very pronounced character is that of the blackish-bespeckled lores and cheeks of *C. thomensis*, which in the Prince's Island bird are practically uniform chestnut; also the base of the bill is always blackish, instead of uniformly coloured as in *C. galeriia*.

The two immature birds, Nos. 36 and 37, obtained by Alexander bear out Count Salvadori's description. The beak is black, the crown of the head and nape are similar to the adult; but the parts which are chestnut in the adult bird are in the young blackish brown, only shading into chestnut on the lower part of the belly and under tail-coverts.

On comparing the young of the species with that of *C. galerita*, the differences which exist are very remarkable. In *C. galerita* young birds are very similar in plumage to the adults and differ from them only in having the cheeks and lores blackish and in the blackish colour of the bill. The plumage of the young bird in *C. thomensis* has already been described, and is entirely different from that of the adult.

Alexander remarks that it is not a common bird along the river.

33. *Agapornis pullaria.

Agapornis pullaria (Linn.); Salvadori, Orn. Golfo d. Guinea, ii. 1903, p. 35; Bocage, Jorn. Sci. Lisboa, 1905, p. 73.

a. ♂ ad. (No. 71).	Near São Thomé.	1. ii. 09.
b. ♂ ad. (No. 130).	Zalma.	4. ii. 09.

Alexander has no notes on this species. Apparently it is not rare and is found on the island throughout the year.

Signor Fea obtained specimens in August and October 1900.

On the west coast of Africa the range of the Rosy-faced Love-bird extends from the Gold Coast to the Congo.

34. ***Flammea flammea thomensis.**

Strix thomensis (Hartl.); Salvadori, Orn. Golfo d. Guinea, ii. 1903, p. 34; Bocage, Jorn. Sci. Lisboa, 1905, p. 73.

a, b. ♂ ♂ ad. (Nos. 86, 87). Zalma. 10. ii. 09.
c, d. ♀ ♀ ad. (Nos. 84, 85). ,, 11. ii. 09.

This fine dark form of the Barn-Owl is confined to the island of St. Thomas, where it is evidently not yet entirely exterminated, as Fea obtained a pair and Alexander four examples during the time they spent on the island. It is, as Count Salvadori remarks, a very rare bird in collections, and the four examples enumerated above are new to the British Museum collection.

35. **Otus leucopsis.**

Athene leucopsis Hartlaub, Rev. et Mag. de Zool. 1849, p. 496.

Scops scapulatus Bocage, Jorn. Acad. Sci. Lisboa, 1888, p. 229.

Pisorhina leucopsis Reichenow, Vögel Afrikas, i. 1901, p. 667.

Pisorhina scapulatus Reichenow, Vögel Afrikas, i. 1901, p. 668.

Scops leucopsis Salvadori, Orn. Golfo d. Guinea, ii. 1903, p. 33; Bocage, Jorn. Acad. Sci. Lisboa, 1891, p. 77; id. 1905, p. 72.

Scops leucopsis (Forma rufa) Salvadori, Orn. Golfo d. Guinea, ii. 1903, p. 34.

Unfortunately I have not been able to examine any specimens of Scops Owl from St. Thomas, and therefore can arrive at no conclusions on the supposed validity of *Otus scapulatus* (Boc.). Count Salvadori obtained through Signor Fea three examples of *Otus* from St. Thomas. The first, he says, is similar to the figure of *O. leucopsis*, with a plumage of greyish brown becoming pale on the underparts. The other two agree with *O. scapulatus* (Boc.). Count Salvadori is of opinion that the two forms belong to one species, which is remarkable for having the posterior part of the tarsus bare, and considers that it may even have to be placed in a separate genus. Bocage, in his last paper, agrees with Salvadori in his conclusions, which are probably correct.

Dr. Reichenow appears to consider the two species quite distinct, and keeps them so in his work. I prefer, however, to follow Count Salvadori, who appears to have thoroughly gone into the question.

36. Milvus ægyptius.

Milvus ægyptius (Gmel.); Salvadori, Orn. Golfo d. Guinea, ii. 1903, p. 33; Bocage, Jorn. Sci. Lisboa, 1905, p. 73.

The Egyptian Kite has been obtained on several occasions in St. Thomas. According to Count Salvadori there is a skin of this species in the Hamburg Museum, collected in the island, and Bocage records five males and females of this Kite in the Lisbon Museum.

37. *Phaëthon lepturus.

Phaëthon lepturus Lacép. et Daud.; Salvadori, Orn. Golfo d. Guinea, ii. 1903, p. 41; Bannerman, Ibis, 1914, p. 620.

Phaëthon candidus Bocage, Jorn. Sci. Lisboa, 1905, p. 89.

a–d. ♂ ♂ ♀ ♀ (Nos. 61, 62, 59, 60). Ilha das Cabras, St. Thomas. 30. i. 09.

The Tropic-bird does not appear to inhabit the main island of St. Thomas, but is very common on the "Isle of Goats"; it is also found on Sette-Pedras and Rolas islets, where Bocage (Jorn. Sci. Lisboa, 1891, p. 85) says that it is very common, and where it nests in the crevices of the rocks.

38. Sula leucogastra.

Sula leucogastra (Bodd.); Salvadori, Orn. Golfo d. Guinea, ii. 1903, p. 41; Bocage, Jorn. Sci. Lisboa, 1905, p. 90.

Bocage received specimens from Francisco Newton, which he had procured on the islets of Sette-Pedras, where they apparently breed.

39. Phalacrocorax africanus.

Phalacrocorax africanus (Gmel.); Salvadori, Orn. Golfo d. Guinea, ii. 1903, p. 41; Bocage, Jorn. Sci. Lisboa, 1905, p. 90.

The African Cormorant is common all round the island according to Newton.

40. Phœnicopterus roseus.

Phœnicopterus erythræus Verr.; Finsch et Hartl. Vög. Ost-Afrik. 1870, p. 795; Bocage, Jorn. Sci. Lisboa, 1905, p. 88.

Phœnicopterus roseus Pall.; Salvadori, Orn. Golfo d. Guinea, ii. 1903, p. 40.

This bird is mentioned by Finsch and Hartlaub as having been obtained on St. Thomas by Weiss, also by Sousa (Journ. Sci. Lisboa, 1888, p. 153; 1891, p. 87). All these references appear to refer to the same specimen, which is said to be in the museum at Bremen The specimen should be re-examined, as Count Salvadori believes that it may prove to be *P. minor*, of which species Fea obtained a specimen on Prince's Island.

41. Lampribis olivacea.

Lampribis olivacea (Du Bus); Salvadori, Orn. Golfo d. Guinea, i. 1903, p. 39; Bannerman, Ibis, 1914, p. 622.

Comatibis olivacea Bocage, Jorn. Sci. Lisboa, 1905, p. 86.

According to Bocage, Newton obtained this Ibis on several occasions in St. Thomas.

As considerable confusion existed with regard to the status of *Lampribis olivacea* (Du Bus), I have been at considerable pains to clear up the matter. A full discusssion will be found in my paper "On the Birds of Prince's Island," which appeared in the last number of 'The Ibis.'

42. Ciconia alba.

Ciconia alba Bechst.; Salvadori, Orn. Golfo d. Guinea, ii. 1903, p. 39; Bocage, Jorn. Sci. Lisboa, 1905, p. 86.

Hartlaub (Orn. Westafr. p. 275) records an example of the White Stork obtained on St. Thomas by Weiss.

43. Ardea gularis.

Ardea gularis Bosc; Salvadori, Orn. Golfo d. Guinea, ii. 1903, p. 22; Bocage, Jorn. Sci. Lisboa, 1905, p. 85.

Bocage obtained specimens of this Heron from both St. Thomas Island and Rolas Islet, where it is doubtless resident.

44. Egretta garzetta.

Herodias garzetta (Linn.); Salvadori, Orn. Golfo d. Guinea, ii. 1903, p. 38; Bocage, Jorn. Sci. Lisboa, 1905, p. 85.

Moller is said to have obtained an example of the Little Egret on St. Thomas. Count Salvadori suggests that it is not improbable that the white form of *Ardea gularis* is referred to.

45. *Butorides atricapilla.

Butorides atricapilla (Afzel.); Salvadori, Orn. Golfo d. Guinea, ii. 1903, p. 38; Bocage, Jorn. Sci. Lisboa, 1905, p. 86.

a. ♀ ad. (No. 67). Near São Thomé. 1. ii. 09.

A single example was obtained by Alexander, who remarks that it was breeding. He found that it frequented the small streams in the island.

46. Bubulcus lucidus.

Bubulcus lucidus (Rafin.); Salvadori, Orn. Golfo d. Guinea, ii. 1903, p. 39.

Bubulcus ibis Bocage, Jorn. Sci. Lisboa, 1905, p. 86.

This Egret has been recorded on several occasions from St. Thomas. It is also said to breed on Rolas Islet (Bocage, Jorn. Sci. Lisboa, 1891, p. 83).

47. Arenaria interpres.

Arenaria interpres Linn.; Salvadori, Orn. Golfo d. Guinea, ii. 1903, p. 39.

Strepsilas interpres Bocage, Jorn. Sci. Lisboa, 1905, p. 87.

Bocage received examples of the Turnstone from St. Thomas and from Rolas Islet (Jorn. Sci. Lisboa, 1889, p. 35; 1891, p. 84).

48. *Totanus hypoleucus.

Tringoides hypoleucos (Linn.); Salvadori, Orn. Golfo d. Guinea, ii. 1903, p. 39.

Tringa hypoleucus Bocage, Jorn. Sci. Lisboa, 1905, p. 87.

a. ♀. ad. (No. 134). Zalma. 1. ii. 09.

The Common Sandpiper has already been recorded from St. Thomas and Rolas Islet by Bocage.

49. Totanus glareola.

Totanus glareola Linn.; Salvadori, Orn. Golfo d. Guinea, ii. 1903, p. 39; Bocage, Jorn. Sci. Lisboa, 1905, p. 87.

The Wood-Sandpiper was obtained on St. Thomas by Francisco Newton.

50. Numenius phæopus.

Numenius phæopus Linn.; Salvadori, Orn. Golfo d. Guinea, ii. 1903, p. 39; Bocage, Jorn. Sci. Lisboa, 1905, p. 87.

The Whimbrel is mentioned by most writers on this island. Count Salvadori gives a complete list of references.

51. Sterna fuliginosa.

Sterna fuliginosa Gmel.; Salvadori, Orn. Golfo d. Guinea, ii. 1903, p. 40; Bocage, Jorn. Sci. Lisboa, 1905, p. 89.

Bocage received a specimen of the Sooty Tern from Francisco Newton, who had obtained it off St. Thomas.

52. Sterna anæstheta.

Sterna anæstheta Scop.; Salvadori, Orn. Golfo d. Guinea, ii. 1903, p. 41; Bocage, Jorn. Sci. Lisboa, 1905, p. 89.

Bocage records this Tern on the authority of Francisco Newton from the islets of Sette-Pedras (Jorn. Sci. Lisboa, 1891, p. 84).

53. *Anous stolidus.

Anous stolidus (Linn.) ; Salvadori, Orn. Golfo d. Guinea, ii. 1903, p. 41 ; Bocage, Jorn. Sci. Lisboa, 1905, p. 89.

a. ♂ ad. (No. 3). São Thomé. 18.i.09.

A single specimen of the Noddy was captured by Alexander on board his boat.

Bocage received several specimens from the islets of Sette-Pedras and Rolas, together with eggs from the first-named (Jorn. Sci. Lisboa, 1891, p. 84).

54. Oceanodroma castro.

Procellaria sp. ? Bocage, Jorn. Sci. Lisboa, 1891, p. 84 ; id. 1905, p. 90.

Oceanodroma castro (Harcourt) ; Salvadori, Orn. Golfo d. Guinea, ii. 1903, p. 41.

Count Salvadori is undoubtedly right in his identification of this Petrel from the minute account published by Bocage. It is an interesting occurrence, and I regret that, when I wrote my paper "On the Distribution of the Tubinares in the North Atlantic Islands" ('Ibis,' 1914, p. 438), I overlooked the fact that the Madeiran Fork-tailed Petrel had been taken in the Gulf of Guinea. The specimen which Bocage procured was captured by the fishermen of Angolares (a fishing-village in St. Thomas) "at a great distance from the shore," and I presume that the skin is preserved in the Lisbon Museum.

The type-locality of *O. castro* is the Desertas Islands (Madeira Group), besides which it is known to breed in the Azores, Salvage Islands, Cape Verde Islands, and St. Helena. Lack of sufficient material induced me to unite the Atlantic and Pacific forms of this Petrel; but in a recent paper ('Auk,' 1914, p. 388) Mr. T. Nichols has shown that there are two distinct forms in the Pacific:—*O. castro cryptoleucura* (Ridgw.), inhabiting the Sandwich Group (Hawaiian Islands), and *O. castro bangsi* Nichols., recently described from the Galapagos and Cocos Islands. I have not yet had an opportunity of comparing these two subspecies from the Pacific Islands.

55. Rallus cærulescens.

Rallus cærulescens Gmel.; Salvadori, Orn. Golfo d. Guinea, ii. 1903, p. 40; Bocage, Jorn. Sci. Lisboa, 1905, p. 87.

Bocage and Sousa both record this Rail from St. Thomas.

56. Crecopsis egregia.

Crecopsis egregia (Peters); Salvadori, Orn. Golfo d. Guinea, ii. 1903, p. 40.

Ortygometra egregia Bocage, Jorn. Sci. Lisboa, 1905, p. 88.

Discovered on St. Thomas by Francisco Newton. His specimens are apparently all in the Lisbon Museum.

57. *Gallinula chloropus meridionalis.

Stagnicola meridionalis Brehm, Vogelf. 1855, p. 331.

Gallinula chloropus (Linn.); Salvadori, Orn. Golfo d. Guinea, ii. 1903, p. 40; Bocage, Jorn. Sci. Lisboa, 1905, p. 88.

a. ♀ ad. (No. 66). Near São Thomé. 2. ii. 09.

b. ♀ ad. (No. 120). Zalma. 5. ii. 09.

Count Salvadori thought it very doubtful whether any form of *G. chloropus* had really been obtained in St. Thomas. The bird in the Lisbon Museum, which Hartlaub and Bocage referred to *G. chloropus*, is pronounced by Salvadori to be *Gallinula angulata* Sund. The typical form, *Gallinula chloropus*, does not range further south in Africa than Egypt. Mr. Claude Grant has gone into the question of the allied races of the Moorhen*, and reference should be made to his paper for further information. He has come to the conclusion that the Moorhen inhabiting the west coast of Africa and the islands in the Gulf of Guinea is unquestionably *Gallinula c. meridionalis* (Brehm), with which opinion I concur.

This Moorhen is found inhabiting the islands of St. Thomas and Annobon, but up to the present time has not been recorded from Fernando Po or Prince's Island.

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* See p. 47 of this number.

58. **Gallinula angulata.**

Gallinula angulata Sund.; Salvadori, Orn. Golfo d. Guinea, ii. 1903, p. 40; Bocage, Jorn. Sci. Lisboa, 1905, p. 88.

Recorded by Sousa from St. Thomas. Bocage seemed to doubt whether *G. angulata* had occurred on St. Thomas. Count Salvadori has examined the specimen sent to the Lisbon Museum, and has satisfied himself that the example was undoubtedly *G. angulata*. *G. angulata* should never be confused with *G. chloropus*, as, apart from its much smaller size, it has the base of the lower mandible *yellow* instead of red as in *G. chloropus* and its subspecies.

59. ***Porphyrio alleni.**

Porphyrio alleni Thomps.

a. ♀ juv. (No. 63). Near São Thomé. 1. ii. 09.

Allen's Gallinule is here recorded from St. Thomas for the first time. According to Count Salvadori it has not hitherto been procured on any of the islands in the Gulf of Guinea.

60. ***Vinago sancti-thomæ.**

Vinago sancti-thomæ (Gmel.); Salvadori, Orn. Golfo d. Guinea, ii. 1903, p. 35; Reichenow, Vögel Afrikas, i. 1901, p. 394.

Treron crassirostris Fraser; Bocage, Jorn. Sci. Lisboa, 1905, p. 83.

a, b. ♀ ♀ ad. (Nos. 29, 30). Lake Amelia. 25. i. 09.

This fine Fruit-Pigeon is restricted to the island after which it has been named and to the adjacent Rolas Islet.

In the 'Catalogue of Birds,' xxi. p. 17, Count Salvadori included the St. Thomas Fruit-Pigeon under the name *Vinago crassirostris* (Bonap.). His reasons for now upholding Gmelin's name are set forth in his paper.

Alexander writes:—"It frequents the tall forest-trees. Its movements are always disclosed in the forest by its noisy wing-beats. The note, which is a crooning rattle, is a double one."

61. Columba thomensis.

Columba thomensis Bocage; Reichenow, Vögel Afrikas, i. 1901, p. 405; Salvadori, Orn. Golfo d. Guinea, ii. 1903 p. 36; Bocage, Jorn. Sci. Lisboa, 1905, p. 83.

I have not been able to examine a specimen of this Pigeon, but I should imagine that it is only an island-form of *C. arquatrix* Temm., and should therefore be known as *Columba arquatrix thomensis.*

The St. Thomas Pigeon is evidently an exceedingly rare bird confined to that island and to the islet of Rolas. No recent collections from these islands appear to have contained examples.

C. thomensis was first mentioned by Bocage in the Jorn. Sci. Lisboa, 1887, p. 87, and described by him as *C. arquatrix* var. *thomensis* in the same Journal for 1888, p. 230.

In the 'Catalogue of Birds,' xxi. p. 277 (footnote), a translation of the original description is given. See also Reichenow.

62. *Turturœna malherbei.

Turturœna malherbei (Verr.); Salvadori, Orn. Golfo d. Guinea, ii. 1903, p. 37; Bocage, Jorn. Sci. Lisboa, 1905, p. 84; Bannerman, Ibis, 1914, p. 629.

a. ♀ ad. (No. 63). Near São Thomé. 2. ii. 09.

This specimen is said by Alexander to have been breeding when he shot it.

63. *Streptopelia senegalensis.

Turtur senegalensis (Linn.); Bocage, Jorn. Sci. Lisboa, 1905, p. 84.

a, b. ♂ ♀ ad. (Nos. 95, 97).	Zalma.	4. ii. 09.
c. ♂ ad. (No. 96).	,,	5. ii. 09.
d. ♂ ad. (No. 94).	,,	6. ii. 09.

When Count Salvadori published his list, the Senegal Turtle-Dove had not hitherto been recorded from any of the islands of the Gulf of Guinea. Its occurrence in St. Thomas was not, however, unknown. Bocage recorded two birds of this species from the island, but considered that their occurrence there might have been accidental. It would appear, however, that the Senegal Turtle-Dove has now obtained a footing in St. Thomas.

64. ***Haplopelia simplex.**

Haplopelia simplex (Hartl.); Salvadori, Orn. Golfo d. Guinea, ii. 1903, p. 37; Bocage, Jorn. Sci. Lisboa, 1905, p. 84.

a–c. ♂ ♂ ad. et ? imm. (Nos. 28, 55, & 27). Lake Amelia. 22–25. i 09.

d, e. ♀ ♀ imm. (Nos. 64, 65). Near São Thomé.

f–p. ♂ ♂ ♀ ♀ ad. et imm. (Nos. 83, and 98 to 197 inclusive). Zalma.

Legs and feet dark claret-red.

Alexander procured a very fine working series of examples of this Dove, showing many interesting phases of plumage. Dr. Reichenow (Vögel Afrikas, i. p. 422) includes also *Haplopelia principalis* as synonymous with *H. simplex*. In this I do not agree with him, and prefer to follow Count Salvadori, who maintains that the Prince's Island Pigeon is a perfectly distinct species (*vide* Bannerman, "Birds of Prince's Island," 'Ibis,' 1914, p. 630).

A careful examination of the series of *H. simplex* obtained in St. Thomas shows that in adult examples, if the sexes have been correctly ascertained by Alexander, males and females do not differ, and have the same dark brown back washed with grey and grey underparts. Younger examples of both sexes have the upperparts more umber-brown and the underparts pale brown tinged with rufous or buff.

Alexander, writing of this species at Lake Amelia, says:—"It is not common, frequenting the forest. It is difficult of approach. When disturbed it gets up from the undergrowth and perches not far off, where it remains silent. It is more often seen towards evening." Writing from near São Thomé, the port on the north coast of the island, he notes:—"This Pigeon is found frequenting the thick osier-like beds of the streams, also the palm-groves. Its note is a soft croon. It is now breeding—2nd of February."

In his diary Alexander particularly remarks that specimen no. 64 was breeding. This bird has not yet assumed the fully adult plumage, but appears to be in an intermediate stage.

According to Bocage the species has also been taken on Rolas Islet, which is situated close to St. Thomas.

65. ***Coturnix delegorguei.**

Coturnix delegorguei Deleg.; Salvadori, Orn. Golfo d. Guinea, ii. 1903, p. 37; Bocage, Jorn. Sci. Lisboa, 1905, p. 84.

a. ♀ ad. (No. 78). Zalma. 1. ii. 09.
b. ♂ ad. (No. 121). „ 4. ii. 09.
c. ♂ ad. (No. 122). „ 7. ii. 09.

This Quail is said by Alexander to be common on waste land and in the vicinity of native farms. He met with it in pairs and found it breeding in the beginning of February. The male calls loudly in the early morning and evening, also just before rain.

The following is a list of doubtful or erroneously identified species which have been said to occur on St. Thomas. It is based entirely on Count Salvadori's list (Orn. Golfo d. Guinea, ii. pp. 42–45), to which I have nothing to add; I entirely agree with all he has to say, having carefully verified his grounds for rejecting each species :—

1. **Melænornis edolioides** (Swains.).

2. **Chlorophoneus olivaceus** (Shaw).

3. **Chlorophoneus sulphureopectus** (Less.).

All mentioned by Allen and Thompson (Exped. Niger, ii. 1848) from Rolas Islet.

4. **Passer simplex** (Swains.).
Hartl. J. f. O. 1861, p. 260.

5. **Lamprocolius ignitus** (Nordm.).
Hartl. J. f. O. 1854, p. 102.

6. **Neophron pileatus** (Burch.).
Hartl. Orn. Westafr. p. 1.

As already mentioned, if any Vulture visits St. Thomas and Prince's Island it is much more likely to be *N. monachus* than *N. pileatus*.

7. **Psittacus erithacus** Linn.
Hartl. Orn. Westafr. p. 166.
Founded on the doubtful assertion of Lopez de Lima.

8. **Agapornis roseicollis** (Vieill.).
Hartl. J. f. O. 1861, p. 262.

9. **Cuculus canorus** Linn.
Sousa, Jorn. Sci. Lisboa, 1888, p. 152.
It certainly would not be suprising to find the Cuckoo occasionally visiting the island on migration.

10. **Ceryle maxima** (Pall.).
Hartl. J. f. O. 1861, p. 106.

11. **Halcyon cancrophaga**.
Hartl. (nec Lath.) J. f. O. 1861, p. 104.
It seems doubtful to what species this record refers.

12. **Merops superciliosus** Linn.
Recorded only by Gujon (*vide* Finsch & Hartl. Vögel Ost-Afrik. 1870, pp. 179–180).

13. **Dicrocercus furcatus** (Stanl.).
Merops hirundineus Hartl. (nec Vieill.) J. f. O. 1861, p. 107.

14. **Melittophagus pusillus** (Müll.).
Merops erythropterus Gmel.; Hartl. J. f. O. 1861, p. 107.

15. **Chalcopelia afra** Linn.
Recorded only by Allen and Thompson (*op. cit.*) from Rolas Islet as *Turtur chalcospilos* (Wagl.).

16. **Turtur semitorquatus** (Rüpp.).
Allen and Thompson (*op. cit.*) record it from Rolas Islet. Count Salvadori suggests that this may refer to *Turturæna malherbei*.

17. **Phyllopezus africanus** (Gmel.).
Hartl. J. f. O. 1861, p. 271.

V.—*Note on the Genus* Ithagenes.

By E. C. Stuart Baker, M.B.O.U.

(Plate III.)

n 1899, when Bowdler Sharpe wrote the first volume of the Hand-list of the Birds,' only three species of this genus f beautiful Blood-Pheasants were then known (Hand-list, ol. i. p. 33), i. e., *Ithagenes cruentus, I. geoffroyi*, and *sinensis*. In August 1912 Beebe published the descrip- on of a new species, which he named *I. kuseri*, and a ew subspecies of *I. cruentus* which he called *I. c. affinis* Zoologica,' New York, U.S.A., vol. i. No. 10), and finally have described *I. tibetanus** from a bird obtained by apt. Molesworth in Tibet.

As regards the forms enumerated by Sharpe, there can e no hesitation in accepting all three as perfectly good pecies well differentiated from one another and with no onnecting links; but, with regard to both *I. tibetanus* and *kuseri*, there may possibly be some doubts as to whether ey should rank higher than subspecies. In their principal oints of coloration the three forms are the same, or iffer only in intensity or degree of colouring. As Beebe oints out, when the three birds are laid out, one notices once that they are grey birds with three brilliant zones of crimson on the ventral surface, chin, mid-breast, d under tail-coverts."

These zones, more especially that on the breast, vary very reatly, not only in the three species, but in individuals the same species; and if differentiation depended on this one, I should certainly reduce both *I. kuseri* and *I. tibetanus* the rank of subspecies of *I. cruentus*, and indeed, when rst exhibiting some specimens of *I. kuseri*, I treated it as a ibspecies of that bird. The distribution, however, of the imson on the head and the difference in the amount and osition of the black would appear to point to the validity of e species: especially is this the case with *I. kuseri*, of which

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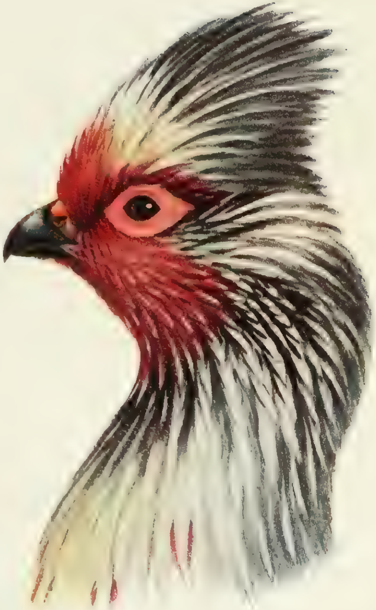
* Bull. B. O. C. xxxv. 1914, p. 18.



1

Fig. 1. ITHAGENES TIBETANUS.

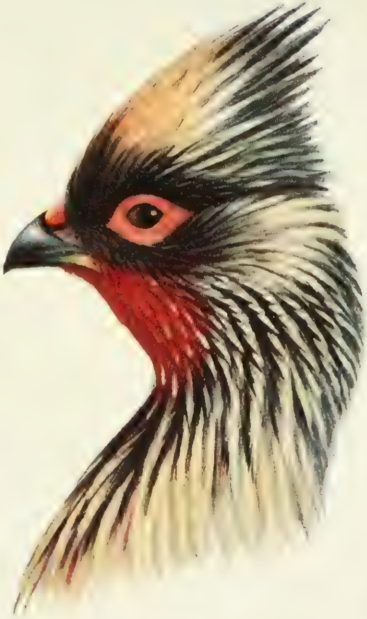


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Fig. 2. ITHAGENES CRUENTUS.

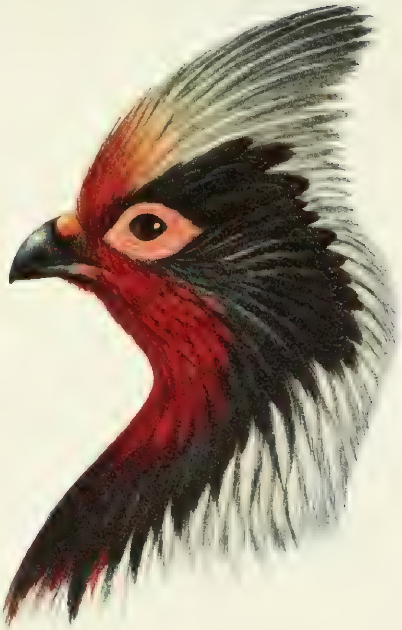

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Fig. 3. ITHAGENES KUSERI.

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I have now been able to examine ten specimens, seven males and three females, and in all these birds the differences existing between this species and *I. cruentus* hold good.

Of *I. tibetanus* there is at present but one specimen, the type, and it is possible, though I think not probable, that when we obtain a series, it may be found that the two birds do grade into one another, and, if this is so, *I. tibetanus* must accordingly be reduced to a subspecies.

The differences between the three species have already been pointed out, and are well shown by the coloured figures of the heads which illustrate these notes (Plate III.).

In *I. cruentus* we find the forehead, supercilium, lores, and a line under the eye black. In *I. kuseri* and *I. tibetanus* the forehead is crimson, and in both also the lores and supercilium are crimson, but in *I. kuseri* the two last are mixed with black to some extent. This is a point strongly against the theory of the birds being subspecies, for *I. kuseri* and *I. cruentus* are the two farthest apart geographically, and we should therefore have expected to find the intermediate supercilium and lores in *I. tibetanus*, which occupies an intermediate geographical area.

All three species have a certain amount of black marking on the feathers of the foreneck, and posterior to the ear-coverts and sides of the neck; but in perfect specimens of *I. kuseri* this black forms an almost perfect gorget round the crimson of the throat, extending through and behind the ear-coverts right up to the grey crest. Here, again, the bird which should be intermediate, *I. tibetanus*, has the least black, indeed practically none.

Beebe mentions the green wing-patch as one of the features distinguishing *I. kuseri* from *I. cruentus*, and as showing the manner in which it approaches *I. geoffroyi*, but, as a matter of fact, when big series of the two first mentioned species are examined, the differences in this respect are not very marked.

In the plumage of the lower parts, the three birds also differ conspicuously: in *I. cruentus* and *I. tibetanus* the distribution is much the same, *i. e.*, crimson throat, pale foreneck, and extreme upper breast marked with black; crimson and pale green breast and flanks, and crimson under tail-coverts. In *I. tibetanus*, however, the black on the foreneck is reduced to a minimum, the tone of the pale part is less pronounced and is less in extent, and the crimson is the main colour on each feather of the breast instead of broad splashes of this colour here and there.

Further minor differences are to be seen in the almost complete want of green on the flanks and abdomen of *I. tibetanus*, and also in the feathers of the chin and throat in this bird being a purer and brighter crimson, with no black lores or black tinge on the chin.

In *I. kuseri* the whole of the breast is practically crimson, the pale green striæ to the centres of the feathers being very narrow, and not spatulate as in *I. cruentus*. Moreover, there is no pale interspace between the throat and the breast, the only interruption being the black gorget, which in some cases is mixed with crimson. Taking all these differences into consideration, for the present I consider it desirable to keep the three forms distinct with the status of species.

As regards Beebe's subspecies *I. c. affinis*, after a very careful and exhaustive examination of over fifty males and as many females, I find I am unable to endorse his conclusions.

Beebe says (*loc. cit.*) that the principal differences between *I. cruentus* and *I. affinis* are:—

(1) The much greater extent of crimson on the breast of typical *I. cruentus* and the almost total absence of crimson on that of *I. affinis*.

(2) The two outermost pairs of rectrices in *I. affinis* have no crimson edges as against the outermost pair only in *I. cruentus*.

To strengthen this argument, Beebe eliminates the Darjiling birds from his new subspecies, and says that these birds probably come from near Nepal, and should therefore be nearest typical *I. cruentus*. Darjiling is, of course, in southern Sikkim, and if the birds were obtained near this place as labelled, they should be of Beebe's southern form

I. affinis; those he has examined, however, were nearer *I. cruentus* than *I. affinis*, so that he appears merely to have *guessed* that they came from Nepal rather than from Sikkim, without, perhaps, quite sufficient data. In some cases, notably those in Hume's collection, collected by Otto Möller, the label Darjiling usually does mean Sikkim, and not Nepal, so it is quite certain that Beebe's diagnosis of "Darjiling" will not invariably hold good.

But I find that even if we allow Darjiling birds to be considered as coming from Nepal, it does not help his definition much, if at all. Thus, there are two birds in the British Museum labelled Darjiling in which the central crimson zone is practically absent, in one bird being represented by a single crimson splash, and in the other by five or six. Yet, according to Beebe, these should be heavily splashed like the Nepal birds. Of the other six Darjiling males I have examined, three have the breast fairly well marked as crimson, and three have it marked as heavily as in the type of *I. cruentus*, which is a Nepal bird. Of the seven birds from Nepal, all have the breast fairly heavily marked with crimson, but one of these is really a Sikkim bird, and has the original label so marked.

Of the birds marked "Sikkim," two have unmarked, or nearly unmarked, breasts, two have this part fairly well marked with crimson, and one has it heavily marked.

Referring next to the number of exterior tail-feathers with crimson fringes, I find that of 47 males in the British Museum Collection, the division works out as follows:—

Birds labelled	With two pairs unmarked.	With one pair unmarked.
Darjiling	4	4
Interior of Sikkim	5	3
Nepal	2	5
Native Sikkim	13	11
Total	24	23

In consequence of the above result of my examination, I am unable to sustain *I. affinis* as a good subspecies.

I should, however, before finally leaving the question as to the value of this subspecies, refer to Beebe's paragraph (p. 192), in which he says: "In regard to the females, those from Nepal show on the whole much more crimson than birds from Sikkim. Taking the character of a distinct crimson band," etc. After a most careful examination of all the females in the British Museum and elsewhere, and of the few which have come into my hands direct, I can find no trace of crimson anywhere. He also adds: "The crimson colour on the margins of the rectrices, which I have never found absent from a Nepalese female": this crimson also I have been unable to discover.

A simple key to the five known species of *Ithagenes* is the following:—

Key to the Species of Ithagenes.

Males.

- A. Throat and chin crimson.
  - *a.* Forehead black .... *I. cruentus.*
  - *b.* Forehead crimson.
    - *a*¹. Anterior ear-coverts and gorget black ...... *I. kuseri.*
    - *b*¹. Anterior ear-coverts yellowish with black edges. No gorget .... *I. tibetanus.*
- B. Throat and chin not crimson.
  - *c.* Inner secondaries and greater coverts of wing partly green .... *I. geoffroyi.*
  - *d.* Inner secondaries and greater coverts of wing partly tan brown.......................... *I. sinensis.*

Females.

- A. Feathers of face and sides of head bright ochre-brown, contrasting with grey crown.
  - *a.* General plumage rufous brown .... *I. cruentus.*
  - *b.* General plumage brown .... *I. kuseri.*
- B. Feathers of face and sides of head grading into and not contrasting with grey crown.
  - *c.* General plumage grey brown .... *I. geoffroyi.*
  - *d.* General plumage rufous brown .... *I. sinensis.*

The female of *I. tibetanus* is as yet unknown.

The distribution of the five species has not yet been completely worked out, and much country has still to be covered in which some form of Blood-Pheasant will certainly be found, but, roughly speaking, we may define their limits somewhat as follows:—

I. cruentus is found practically throughout Nepal, except in the extreme west, where *probably* the Gogra River forms its western boundary. Eastwards through Sikkim it works into western Bhutan, but its eastern limits are not yet defined. Southwards in Nepal it is found as far as the higher ranges extend, but does not apparently venture below 8000 feet, even in the coldest weather. In Sikkim it is obtained as far south as the extreme end of the Singalila range, and perhaps even farther south on the Dumsang range, north-west of Darjiling, whence I have received a nest of *Horornis*, containing numerous feathers of a Blood-Pheasant. Northwards in Tibet we do not yet know how far it goes, but I have reports of its existence in the Chambi Valley.

As regards *I. tibetanus* we have but the one bird, which was taken on the Sela Range, above Tawang, at about 13,000 feet in south-east Tibet. It is possible, therefore, that this species inhabits the area in eastern Bhutan and Tibet, which is bounded by the Dihong or Brahmapootra River.

I. kuseri, which was originally obtained on the Mekong River in north-west Yunnan, is now known to extend from the Mishmi and Abor Hills east of the Dihong round through the higher ranges of Burma and Yunnan into the north of the North Shan States.

I. geoffroyi is found in the extreme south-east of Tibet, and the Szechuen Mountains in west and west-central China.

I. sinensis is found in the higher ranges of the Shen-si and Kansu provinces north and east of the area inhabited by the last bird.

In an article entitled "Preliminary Pheasant Studies," which appeared in 'Zoologica,' vol. i. No. 15, Beebe has written a most interesting account of how he proposes to divide the genera of the family Phasianidæ into groups or subfamilies, according to the manner in which they moult their tail-feathers. According to this system, *Ithagenes* would obtain a place amongst the Perdicinæ or true Partridges. In habits it would, however, appear to come very close to the Tetraonidæ, and the eggs of *I. geoffroyi* and *I. kuseri*, which appear to be the only ones known at present, are exactly like weakly marked eggs of the Grey Hen.

VI.—*A Few Notes on* Tetrao urogallus *and its Allies.*

By Collingwood Ingram, M.B.O.U.

When working at my Pyrenean specimens of Capercaillie, I found it necessary to go rather more deeply into the study of this group of birds than I had at first intended, and in the course of my investigations I have been forced to examine a large number of examples. The opinions expressed below are principally based on the fine series contained in the Tring and British Museums and the mounted specimens in the Marmottan collection now preserved in the Muséum d'Histoire Naturelle of Paris.

Although at first sight the Capercaillie appears to be a somewhat variable species, not only in dimensions, size of bill, &c. (which depend partly upon the age of the individual), but also in the plumage of the female, it will be found that these differences have their limitations within certain geographical areas, and when a greater mass of material is brought together and the whole group carefully reviewed, a number of fairly well-defined local races will no doubt be distinguishable.

Brehm, of course, recognised several forms of this bird, and three of these he maintained, in his 'Vogelfang' (p. 87)*, viz.: (1) the typical *Tetrao urogallus* of Linnæus, ranging from central Germany northwards; (2) *Tetrao major* (which he describes as a larger bird with a thicker bill), also inhabiting central Germany ; and, finally, (3) *Tetrao crassirostris* (which he declares is almost as large as *T. major*, with a thick and strong bill and a very long tail), inhabiting Carinthia and, probably, the Tyrol and Switzerland.

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* In the present paper I have intentionally avoided all reference to obvious hybrids or aberrations.

As a matter of fact neither of the last two-mentioned forms appears to be valid. I have, at any rate, no hesitation in uniting *T. major* with *T. urogallus**, while, should further research prove *T. crassirostris* to be really distinct, it is certain that the characters enumerated above will not serve to distinguish it. Unfortunately we have very little material from the mountains of central Europe to judge from, and so far, I have only been able to examine a single male from Switzerland and a second from the Italian Alps. Neither of these agrees in the least with Brehm's description of *T. crassirostris*, unless, perhaps, it be in the rather long tail of the Swiss bird (Pilatus 14.4.06, in the Tring Museum).

In Scotland the Capercaillie was re-introduced from Sweden at the comparatively recent date of 1837, so it is scarcely surprising to find that specimens from that country are still indistinguishable from the typical Scandinavian bird. It is only fair to add, however, that fully-grown examples of the latter sometimes attain slightly larger dimensions and are often heavier birds †.

From the eastern portions of its range continental naturalists profess to recognise at least three races of the Capercaillie. Of these the bird inhabiting the Ural Mountains is at once the most beautiful and distinct. The male of this form is much paler and greyer than that of the typical bird, and a large part of its plumage is of a clear grey colour, finely pencilled with blackish. The wing-coverts and scapulars are light rusty-brown instead of the deep mahogany in *T. u. urogallus*; while, finally, there is very little black on the under parts, and white largely predominates on the belly. The female is also conspicuously paler in coloration, and has relatively few black barrings on the under parts, which are profusely marked with white. The secondaries and scapulars are likewise distinctly spotted with white.

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* It is perhaps true that *T. urogallus* attains its maximum size in Germany, western Russia, and south Scandinavia, but measurements prove that this superiority is neither constant nor well-marked.

† Millais (Nat. Hist. of Brit. Game Birds, pp. 1 and 3) states that the weight of an adult male from Scotland ranges between 9 and 12 lbs. He has known Russian examples to turn the scales at 14 lbs., while south Swedish birds have been recorded up to 16 and 17 lbs.

Of this handsome bird, *T. u. uralensis* Nazarow*, there is happily no lack of specimens both in the Tring and British Museums, and there can be no question as to its sub-specific distinctness. But what about Meyer's *T. u. taczanowskii* † from south-west Siberia, and Buturlin's *T. u. volgensis* ‡ from south-east Russia? I have failed to find an ample description of the former, but as Buturlin says it differs only from his *T. u. volgensis* by having a greater amount of white on the outer edge of the primaries and a larger bill, it is safe to assume that the two birds are very similar in coloration. Unfortunately, topo-typical specimens of these races do not appear to exist in England, and it is therefore impossible to express any definite opinion upon them. There are, however, four very interesting Siberian specimens in the British Museum which throw some light upon the subject. These were collected by Seebohm in lat. 66·5° N. during his visit to the valley of the Yenesei in the summer of 1877. The two males from this district agree closely with Buturlin's description of his *T. u. volgensis*, and as this, in turn, is stated to resemble *T. u. taczanowskii*, it seems highly probable that the whole of western Siberia is inhabited by the same bird, viz. *T. u. taczanowskii*. Judging by the Yenesei specimens, this form might be described as intermediate between the typical *T. u. urogallus* and *T. u. uralensis*, for while it does not appear to be quite so dark as the former, it is certainly not so pale, nor is it so grey as the latter. The following is a brief description of the British

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* Bull. Soc. Imp. Nat. Mosc. lxii. 1887, p. 365.

† Meyer, 'Unser Auer-, Rackel- und Birkwild,' Wien, 1887, p. 10.

‡ Buturlin, Orn. Monatsb. 1907, p. 81. In this paper Buturlin attributes the authorship of *T. u. taczanowskii* to Stejneger, but I think this must be an error.

Museum specimens. The males are generally paler than *T. u. urogallus,* and the grey vermiculations cover a larger area of the whole plumage and extend further down the tail. The brownish portions of the upper surface are lighter and of a more rusty-tawny colour. The females are also inclined to be pale, and in one example, especially, the plumage is generously marked with white. The feet and legs are heavily feathered.

The characters assigned to *T. u. volgensis* do not appear to me to satisfactorily differentiate it from the above form. It must be pointed out, however, that the habitat of *T. u. uralensis* lies between that of *T. u. taczanowskii* and *T. u. volgensis.* Under these circumstances, therefore, and without any evidence to the contrary, we are bound to acknowledge Buturlin's south-Russian form.

We must now turn our attention to the western portions of the Capercaillie's range. Here we find a considerable gap in the distribution of the species, and at the present day practically the whole of France separates the Pyrenean from the Alpine birds. This complete isolation is apparently only of recent date, for we have proof that the Capercaillie formerly inhabited the higher pine-clad peaks of the Auvergne mountains *. Although it still exists in the Pyrenees, it has now become so rare in these mountains that there is every reason to fear its ultimate extinction. As a consequence, one very seldom has the opportunity of handling a Capercaillie from this locality. I may, therefore, consider myself fortunate in having been in the position to examine no fewer than eleven examples from various portions of this range. All of these agree in being remarkably small birds, while the females are generally rather dark in coloration and are very distinctly barred on the under surface. Having carefully considered the question, I am of the opinion that these characters are sufficiently pronounced to warrant the bird's recognition as a new sub-species. I therefore propose to name it:—

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* Magaud d'Aubusson (Bull. Soc. Nat. d'Acclim. France, 1897, p. 278) says that the last Capercaillie was killed in the Auvergne more than half a century ago. "At the end of the eighteenth and perhaps still at the commencement of the nineteenth century, it was found not only in the mountains of Cantal, but also in the lower Auvergne, near Olliergues, in the Menat and Mont Dorés woods, and in the mountains round the town of Ambert. It was known in this province by the name of 'Faisant bruyant,' and it was formerly common."

Tetrao urogallus aquitanicus, subsp. n.

Habitat. The Pyrenees and perhaps the Cantabrian Mountains, at elevations of probably not less than 4,500 ft. above sea-level.

The types of the subspecies are a male from Vallée de Latour, Htes. Pyr., May 20, 1913, and a female from Pic de Gaube, Htes. Pyr., October 10, 1912, both in my collection.

The males, although some are inclined to be on the dark side, differ chiefly by their diminutive size, as the following wing-measurements show, the average length in six specimens being only 360·7 mm., which is 25·6 mm. less than in the average typical bird.

	Wing.
♂ ad. Vallée de Latour, Htes. Pyr., 2,000 m., May 20, 1913. (Ingram Coll.)	367 mm.
♂ ad. Sapinière de Culavus, Htes. Pyr., 1,600 m., May 1906. (Tring Museum)	368 mm.
♂ ad. Vallée de Latour, Htes. Pyr., May 3, 1905. (Tring Museum)	348 mm.
♂ ad. Ax-les-Thermes, Ariège, May 27, 1896. (British Mus.)	345 mm.
♂ ad. Luchon, Hte. Garonne, May 15, 1876. (Marmottan Coll.)	370 mm.
♂ ad. Luz, Htes. Pyr., Feb. 8, 1870. (British Mus.)	366 mm.

(*Note.*—Dr. Bureau says that the wing of the only Pyrenean specimen in the Nantes Museum measures 385 mm., but as I have not measured this bird myself, I have purposely omitted it from the above list.)

The females are proportionally just as small as the males, but apart from this they differ appreciably in the coloration of their plumage. This is especially marked when one compares them with the more northern examples of *T. u. urogallus,* while of course it is still more emphasized when they are placed by the side of *T. u. uralensis.* In the Pyrenean race the blackish barrings on the under surface are very distinct and connected, and the belly is never very heavily marked with white. The upper surface is inclined to be dark and rather cold in tone, having less of the warm brown tints in the ground-colour of the mottled feathers. The average wing-measurement of the five specimens examined is 278·9 mm., or 21·6 mm. less than that of the average typical bird. The details are as follows :—

	Wing.
♀ ad. Pic de Gaube, Htes. Pyr., 1,800 m., Oct. 10, 1912. (Ingram Coll.)	284 mm.
♀ ad. Environs of Cauteret, Htes. Pyr., 2,000 m., Nov. 8, 1906. (Tring Mus.)	281 mm.
♀ ad. Environs of Cauteret, 1,600 m., June 1906. (Tring Mus.)	277 mm.
♀ ad. Forêt de Gaube, Htes. Pyr., 1,600 m., Oct. 10, 1904. (Tring Mus.)	270 mm.
♀ ad. Bagnères-de-Bigorre, Htes. Pyr., Sept. 1, 1881. (Marmottan Coll.)	282 mm.

By way of comparison it might be interesting to state that the average wing-measurement of twenty-six males of *T. u. urogallus* from various parts of Europe is 386·3 mm. (maximum 403 mm., from Lithuania [Brit. Mus.] : minimum 374 mm., from Scotland [Brit. Mus.]). The average of a similiar number of females is 300·5 mm. (maximum 317 mm., from Novgorod, Russia [Tring Mus.]; minimum 286 mm., from Norway [British Mus.]).

VII.—*Notes on the Bird-Life of Eastern Algeria.* By the Rev. F. C. R. Jourdain, M.A., M.B.O.U. *With Contributions* by H. M. Wallis, M.B.O.U., and F. R. Ratcliff, M.B.O.U.

The following notes are based upon two visits paid by the writer to eastern Algeria in the spring of 1913 and of 1914. After landing at Philippeville I travelled by rail to Constantine, and thence to Biskra, breaking the journey at Ain Yagout, Bâtna, El Kantara, El Outaia, and Biskra. From

Batna the hills were worked east to Lambèse and Timgad, and from Biskra an excursion was made to Sidi Okba and Bordj Saada; while on the return journeys short visits were paid to Hammam Meskoutine, Bône and Lac Fetzara. Nearly 800 eggs were collected during the two expeditions. Messrs. F. R. Ratcliff and E. Mackenzie Murray also stayed for six weeks in north-east Algeria in the spring of 1913 and camped for some time at Ain Mokra, and Mr. Ratcliff has kindly contributed notes on the birds and eggs obtained there. Mr. H. M. Wallis has visited Algeria on four occasions: first, in February and March 1906, when he travelled from Algiers to Biskra, and from El Kantara for nine days in the southern Aurès range to Timgad, returning by Lambèse, H. Meskoutine, and Tunis. In March and April 1910 he visited Lac Fetzara twice, also H. Meskoutine and Biskra, and in 1911 again stayed at Bône and H. Meskoutine. In March and April 1912 (together with Mr. C. E. Pearson) he revisited Bône, H. Meskoutine, Constantine, Kroubs, El Kantara, and Biskra.

In the following notes, the portions for which the writer is responsible are marked (J): those contributed by Mr. Ratcliff (R), and those taken from Mr. Wallis's notes (W).

In order to facilitate comparison, the order and nomenclature of the list published by the Hon. W. Rothschild and Dr. Hartert in 'Novitates Zoologicæ,' xviii. pp. 471–550, have been as far as possible followed throughout. In those cases where there is any doubt as to the subspecies observed, binomials have been used.

1. **Corvus corax tingitanus** Irby. Moorish Raven.

Widely distributed over the whole of eastern Algeria, and in some parts common, but less numerous near the north coast. In the outskirts of Batna parties of five or six may be seen together, even in the breeding season. It nests by preference in cliffs, but occasionally also in high mud-banks, and in the wooded districts breeds in trees. We found a nest with five eggs at the top of an ilex, some 30 ft. from the ground, in the hills above Lambèse, on May 2. These eggs had only been incubated for a few days, but the breeding season is evidently somewhat variable, as we also found young in a nest on Djebel Mellah, in the plain of El Outaia, on April 20, and took a clutch of two much incubated eggs on April 18. Most birds in this district, however, seem to lay about the third week in April (J). Abundant in Aurès range: flocks of nine and eleven seen on snow-covered fields in February. A nest seen in a pine above a cliff on Djebel Azrak (W). Not common near Lac Fetzara, only a pair or two seen (R).

2. **Coloeus monedula cirtensis** Hart. & Rothsch. Algerian Jackdaw.

A common resident in the gorge of the Rummel at Constantine (J; W).

3. **Pyrrhocorax pyrrhocorax** (L.). Chough.

Met with in some numbers on the precipitous sides of Djebel Metlili, near El Kantara, but the breeding places were inaccessible (J). Flock of twenty close to El Kantara on Feb. 12; also noted at Tilatou: while in the clefts of the limestone rocks in the Taya gorge they were numerous in March 1906 (W).

4. **Garrulus glandarius cervicalis** Bp. Algerian Jay.

Several Jays were seen in the cork-oak forests at Gerst Tobeïga, west of Lac Fetzara. In the woods above Batna and Lambèse they were tolerably common. A clutch of three eggs was found in an ilex on April 28, while a second nest was still empty on May 2 (J). Only met with in Taya cork-oak forest, April 8, 1911 (W).

5. **Pica pica mauritanica** Malh. Moorish Magpie.

Tolerably common in the ilex scrub, which clothes the foothills of the Aurès range near Lambèse, but somewhat local, and nesting in colonies, several pairs breeding within a short distance of one another. The nests are almost invariably placed in ilex bushes generally at a height of about five feet from the ground, though on one occasion we found a nest at nine feet. They are extraordinarily bulky, and the remains of nests of previous years may be seen in various stages of decay. The incubating bird sits very close, and is sometimes caught on the nest by the Arab herdboys, who destroy most of the eggs. Fresh and slightly incubated clutches of five or six eggs were taken between April 26 and May 2 (J). An old nest noticed in low ilex, high up on south slope of Aurès range (W). Nest with fledged young a day's march east of Khenchela on May 24 (R).

6. **Sturnus vulgaris vulgaris** L. Starling.

Seen in the market at Algiers, beginning of February: also seen in flocks at El Kantara and Hammam Meskoutine in February (W).

7. **Oriolus oriolus oriolus** (L.). Golden Oriole.

Males were noted on migration at Bordj Saada (April 25) and near Batna (May 3). M. Dufourg, jun., assured me that a pair once nested within the precincts of the Ferme Dufourg (J). First heard at Hammam Meskoutine about March 1: a flock of four males in a garden near Biskra on April 12, 1912 (W). Two or three seen at Ain Mokra on May 3 (R).

8. **Coccothraustes coccothraustes buvryi** Cab. North-African Hawfinch.

Flocks noticed in the fruit-trees at Lambèse on May 3 (J). Met with abundantly near Hammam Meskoutine in March and April 1911 (W).

9. **Loxia curvirostra poliogyna** Whit. North-African Crossbill.

Small parties met with among the Aleppo pines between Batna and Lambèse on April 27 (J).

10. **Chloris chloris aurantiiventris** (Cab.). Spanish Greenfinch.

Common in the gardens at Batna and Lambèse (J). Common near Kroubs; abundant and breeding at H. Meskoutine: eggs from April 19 (W). Breeds near Lac Fetzara: eggs taken in May (R).

11. **Carduelis carduelis africanus** Hart. North-African Goldfinch.

Generally distributed and very common, from the north coast to the oases south of the Aurès range such as Biskra and Sidi Okba. At Biskra we found eggs and young in the nests on the crowns and leaves of palm-trees, April 23–25, and at El Outaia large numbers were found breeding from April 16 onwards, on which date we found young (J). Abundant and general (W).

12. **Carduelis cannabina mediterranea** (Tsch.). Mediterranean Linnet.

Common on the high ground near Lambèse, where we found nearly fledged young on April 27 and met with many clutches of fresh eggs a few days later (J). Linnets (subsp. ?) noted in February at Biskra, the Aurès, Hammam Meskoutine, and on the wheat-growing plains (W).

13. **Serinus canarius serinus** (L.). Serin.

Widely distributed, as far south as Biskra, and tolerably common, but not so plentiful as the Goldfinch. A nest found in a palm at Biskra (J). Clutch of four fresh eggs ten feet up in orange-tree at Ain Mokra (R). Common and general: eggs taken at El Kantara, and an unfinished nest at Hammam Meskoutine on April 21 (W).

14. **Erythrospiza githaginea zedlitzi** Neum. Algerian Trumpeter Bullfinch.

Breeds in some numbers on the stony hills from El Kantara to Biskra, nesting under shelter of stones or among boulders, and sometimes in holes and crevices of high mud-cliffs. In a little gully at the foot of Djebel Mellah I met with four pairs nesting within a few yards of one another. They are confiding little birds, and will remain on the nest when the observer is within a yard or two. Clutches of four to six eggs may be found during the latter half of April (J).

15. **Fringilla cœlebs africana** Lev. Algerian Chaffinch.

Not uncommon near Philippeville and on the wooded hillsides of the Aurès, but apparently breeds rather late (J). Common near Ain Mokra: nest on May 5 with three eggs (R). General at El Kantara in February: nest and eggs in palm-tree at El Kantara, April 1910: also breeding in olives at Hammam Meskoutine on April 20, 1912, and in cork-oak at Philippeville on April 26 (W).

16. **Petronia petronia barbara** Erl. North-African Rock-Sparrow.

Breeds among the stonework of the Roman ruins at Lambèse; in holes of bridges at El Kantara, and in crevices and hollows in friable sandstone or high mud-cliffs near El Outaia. Generally found nesting in colonies. Fresh eggs taken on April 19 (J). Nest in a hole of a clay scarp with one egg, on April 14, 1912, at El Kantara (W).

17–18. **Passer domesticus tingitanus** Loche and **P. hispaniolensis hispaniolensis** (Temm.). House-Sparrow and Spanish Sparrow.

For fuller information as to the interbreeding of these two species in Algeria, we must refer our readers to the interesting observations of Messrs. Rothschild and Hartert, published in 'Novitates Zoologicæ,' xviii. pp. 479–482. At El Outaia *P. hispaniolensis* was the prevalent form, and a male caught at Ain Dahlia was apparently a pure bred specimen of this species. These birds were breeding in the houses, as *P. domesticus* does with us. In the zizyphus bushes on the edge of the desert at Bordj Saada were hundreds of old Sparrows' nests, from which in many cases young had evidently been hatched off, but on April 27 there was not a single bird in the neighbourhood. In north Algeria the groves of eucalyptus near the stations are frequently occupied by colonies of Sparrows (J). The eucalyptus woods at Ain Mokra swarm with Sparrows, which appear to be *P. hispaniolensis*. One Stork's nest must have held twenty nests. Incubated eggs on May 5 (R).

19 **Emberiza calandra** L. Corn-Bunting.

Extremely common in the corn-growing districts south to Biskra. Clutches of five to six eggs taken from mid-April onward (J). Common near Ain Mokra: clutches taken from May 13 to 15 (R).

20. **Emberiza cia africana** Le Roi. African Rock-Bunting.

Noted near El Kantara, and on the hills above Lambèse on May 2 (J). Common on the barren and bushy hillsides of the Aurès range: also noted at H. Meskoutine in April (W).

21. **Emberiza cirlus** L. Cirl Bunting.

A nest with four incubated eggs found on May 14 at Ain Mokra (R).

22. **Emberiza striolata sahari** Lev. House-Bunting.

It is well known that this bird breeds in holes in the Arab houses at El Kantara, Biskra, and other places, but we were much surprised to find a nest with three eggs in the crown of a palm-tree at Biskra, quite 25 ft. from the ground! Moreover, it is by no means confined to the neighbourhood of houses, for we found several nests in small caves and recesses in the face of perpendicular cliffs at considerable altitudes among the mountains, and far from any buildings. In the villages almost any kind of hole may be utilized: we have seen the characteristic "pad" of hair, lining even old Swallows' and Pigeons' nests in the outbuildings of a French farm. The clutch consists of four eggs and fledged young were seen on April 21, and fresh eggs from April 18 to May 1 (J). Resident in Biskra, El Kantara, and the Arab villages in the Aurès range, where it was found haunting the houses in February (W).

23. **Rhamphocorys clot-bey** Bp. Falcon-billed Lark.

A family party of recently fledged young met with east of Biskra on April 24 (J). Empty nest and four half-grown young found dispersed at varying distances on April 10, 1912, near Biskra: both parents shot (W).

24. **Melanocorypha calandra calandra** (L.). Calandra Lark.

Generally distributed over all the corn-producing district from El Guerrah south to the plain of El Outaia and east to Lambèse. Nests with four eggs taken April 23 and May 2 in cornfields near Lambèse (J). Abundant and general on the central tableland (W). Not noted near Lac Fetzara (R).

25. **Calandrella brachydactyla rubiginosa** Fromh. South Algerian Short-toed Lark.

Fairly common on the plain of El Outaia, especially on the edge of cultivation. Nests with three or four eggs found from April 17 to 30 (J). Short-toed Larks (subsp. ?) are also found in Algeria in winter: noted in Algiers market and on snowy ground at El Guerrah (W). Seen near Lac Fetzara, May 11 (R).

26. **Calandrella minor minor** (Cab.). Lesser Short-toed Lark.

Only met with near Bordj Saada late in April (J).

27. **Ammomanes deserti algeriensis** Sharpe. Algerian Desert Lark.

Quite common on the rocky hillsides at El Kantara and on the mountain slopes bordering the plain of El Outaia, as well as near Biskra. All the nests found had a more or less prominent wall of loose stones on the lower side, and are generally sheltered by a flat stone or a small clump of some desert plant. The usual number of eggs is three or four: only one out of about thirty nests examined contained five eggs. There is much variation in the size and colour of the eggs; the largest measuring 25·4 × 18 mm., and the smallest 19·9 × 16·1 mm. Nests with young were found on April 20 and 21 at El Outaia, and fledged young seen at Biskra on the 24th, but many fresh eggs were taken from about April 20 to the end of the month (J). Hen feeding young in nest at Fontaines Chaudes near Biskra on April 11, 1912 (W).

28. **Galerida cristata arenicola** Tristr. Tristram's Crested Lark.

This form of Crested Lark is common in the plain of El Outaia and is also found near Biskra and Sidi Okba. Nests with four or five eggs were found from April 16 onwards. In many cases the eggs are more boldly marked than those of *G. theklæ,* but this is not invariably the case, and as the ranges of the two species overlap, careful identification is necessary (J).

29. **Galerida theklæ harterti** Erl. Hartert's Crested Lark.

Nest and four eggs of this dark race taken at H. Meskoutine, April 21, 1912 (W). Common on hillsides at Ain Mokra ; nests with five and four eggs taken on May 9 and 12 (R).

30. **Galerida theklæ hilgerti** Roths. & Hart. Hilgert's Crested Lark.

Common on the stony hillsides near El Outaia and El Kantara, and also east to Lambèse. Most nests contained three eggs, and none more than four. They show great variation, but are never, in my experience, so boldly marked as some eggs of *G. cristata arenicola.* Eggs were found from April 20 onward (J).

31. **Galerida theklæ deichleri** Erl. Deichler's Crested Lark (?).

Met with on stony patches in desert south of Bordj Saada : one flushed from nest with three incubated eggs on April 27 ; and another nest with four eggs taken next day (J).

32. **Lullula arborea harterti** Hilg. North-African Woodlark.

Met with along the hillsides from Batna to Lambèse : a nest with four eggs found at the edge of the scrub on April 26 (J). Woodlarks met with in February at El Guerrah and H. Meskoutine : also in the market at Algiers (W).

33. **Alauda arvensis harterti** Whit. North-African Skylark.

Common in the cornfields near Batna and Lambèse, and south to MacMahon, where one was singing on April 20. Fresh clutches of three or four eggs taken from April 19 to 28 (J). Found breeding near Ain Mokra early in May (R). Skylarks (subsp. ?) noted at Biskra on Feb. 7, also at H. Meskoutine, and flocks near Bône on April 5 (W).

34. **Anthus trivialis trivialis** (L.). Tree Pipit.

One at Algiers, perched on a tree, early in February 1906 (W).

35. **Anthus pratensis** (L.). Meadow Pipit.

Noted at Biskra, February 6, 1906 (W).

36. **Anthus campestris** (L.). Tawny Pipit.

Not uncommon on the bare hillsides from Batna to Lambèse and also near Ain Yagout. A nest with five eggs taken on April 24 (J). Several pairs seen on the high plateau (R).

37. **Motacilla flava cinereocapilla** Savi. Ashy-headed Wagtail.

One of the problems we were particularly anxious to solve, was which race of Yellow Wagtail bred in north Algeria. The older writers, such as Tristram and Salvin, merely recorded "*Budytes flava*" as breeding at Zana and Ain Djendeli, and eggs from these localities are still catalogued under this head at the British Museum. Large numbers of some race of *M. flava* were migrating through Bordj Saada on April 26, but no specimens were obtained. They were evidently on their breeding ground in the water-meadows near El Guerrah on April 30 (J). Later they were found quite common and breeding near the shore of Lac Fetzara in May. A male shot at the nest had all the characteristics of the Ashy-headed form—white throat, dark crown, and indistinct eye-stripe, and a clutch of six eggs was taken on May 7 (R).

38. **Motacilla flava flava** L. Blue-headed Wagtail.

Seen on migration at Biskra in April 1912 (W).

39. **Motacilla alba alba** L. White Wagtail.

Almost universal in February: Biskra, February 7, etc. (W).

40. **Motacilla boarula boarula** L. Grey Wagtail.

Seen in the gorge at Constantine, February 23, 1906; also at Hammam Meskoutine about a week later (W).

41. **Certhia brachydactyla mauritanica** With. North-African Tree-Creeper.

Seen and heard in the cork-oak woods at Taya, April 8, 1911. Note quite loud and distinct (W).

42. **Parus major excelsus** Buvry. Algerian Great Tit.

Scarce: a pair seen near Lambèse (J). Noted in the Aurès range, February 15: also in cork woods at Taya (W). Uncommon at Ain Mokra: one nest with five eggs found in a eucalyptus stump, below the level of the ground, May 12, 1913 (R).

43. **Parus cœruleus ultramarinus** Bp. Ultramarine Tit.

General in wooded districts. Met with in the pine and ilex forest near Lambèse: a clutch of six eggs taken from a hole in ilex on April 29. Also common among the palms in oases of Biskra, Sidi Okba, etc. (J). Noted at El Kantara, H. Meskoutine, Algiers, Philippeville, and Bône, where it was breeding (W). Fairly common at Ain Mokra: nest with four incubated eggs behind a strip of eucalyptus bark, May 8, 1913 (R).

44. **Parus ater ledouci** Malh. Algerian Coal-Tit.

Clearly identified in pine forest above Lambèse, April 28 (J). Seen in cork-oak forest at Taya, April 8 (W).

45. **Panurus biarmicus** (L.). Bearded Tit.

This species has not been previously recorded from Algeria, but Mr. Wallis saw a pair, one of which had a grey head, at close quarters flitting through the reeds in front of his boat on Lac Fetzara, and uttering the well-known ringing note, on April 11, 1911 (W).

46. **Lanius excubitor elegans** Swains. Desert Grey Shrike.

Met with in scattered pairs from El Kantara to the Col de Sfa, while in the zizyphus bushes near Bordj Saada it is quite common. The clutch varies from four to six in number. Nearly fledged young were found in the nest on April 27, but fresh eggs were also taken from April 18 to the end of the month (J).

47. **Lanius senator senator** L. Woodchat.

Generally distributed, and in some districts common from the north coast to Biskra, wherever there are any trees; a few pairs nesting even on the hillsides south of El Kantara (J). A nest with two eggs at H. Meskoutine on April 22, and another with one egg at Bône on the 25th: abundant near Lac Fetzara (W). Common at Ain Mokra, breeding in thorn-bushes, eucalyptus, olive, and oak trees: clutches of five or six eggs, May 5 to 15 (R).

48. **Pycnonotus barbatus barbatus** (Desf.). Dusky Bulbul.

Only noted at H. Meskoutine (J); Lac Fetzara and H. Meskoutine (W). Several at Ain Mokra (R). It is remarkable that the nest of this species has not been found by the many ornithologists who have seen the bird at Hammam Meskoutine.

49. **Muscicapa hypoleuca** (Pall.). Pied Flycatcher.

A pair seen at H. Meskoutine on April 19 and also on April 21, 1912 (W). These may have belonged to the Algerian breeding race, or possibly were only on passage.

50. **Muscicapa striata striata** (Pall.). Spotted Flycatcher.

On passage at Bordj Saada on April 26 (J). Common at Ain Mokra in May: clutch of three eggs taken on

May 13. 1913. This species had not been recorded previously as breeding in North Africa until Graf Zedlitz took a nest on May 22, 1913, at the same locality. See Journ. f. Orn. 1914, p. 139 (R).

51. **Phylloscopus collybita collybita** (Vieill.). Chiffchaff.

Reported as heard on February 17, and heard on the 25th at H. Meskoutine (W). (Several times *Phylloscopi* were noted on migration, but as no specimens were obtained it is inadvisable to record them.)

52. **Cettia cetti cetti** (Marm.). Cetti's Warbler.

Several seen and heard by the irrigation channels at Kroubs, April 17, 1912 (W).

53. **Acrocephalus arundinaceus arundinaceus** (L.). Great Reed-Warbler.

Very common in the reed-beds on Lac Fetzara. Most nests were still unfinished on May 1 (J). Nests ready for eggs on May 4 and full clutches of four eggs on May 13–15 (R). Heard and seen on April 11 (W).

54. **Acrocephalus streperus streperus** (Vieill.). Reed-Warbler.

While working the banks of the Oued Biskra, near Bordj Saada, I was much surprised to find many pairs of Reed-Warblers in full song among the mixed reeds and tamarisks. A careful search resulted in the discovery of an almost finished nest, about five feet from the ground, in a tamarisk bush. This is an extension of the breeding range of this species, which has hitherto not been recorded as breeding south of Ain Djendeli and Zana, and even there with some uncertainty, owing to confusion with *A. aquaticus* (J). Breeds in small numbers on Lac Fetzara: nest with three eggs on May 13, 1913 (R).

55. **Acrocephalus schœnobænus** (L.). Sedge-Warbler.

Song heard on Lac Fetzara, April 11, 1911 (W).

56. **Hypolais icterina** (Vieill.). Icterine Warbler.

Seen and heard at H. Meskoutine, April 1911 (W).

57. **Hypolais polyglotta** (Vieill.). Melodious Warbler.

Nest with five eggs found suspended among trailing briars at Ain Mokra, May 13, 1913 (R).

58. **Hypolais pallida reiseri** Hilg.

In song in the gardens at Biskra, April 24 (J).

59. **Sylvia hortensis hortensis** (Gm.) [*S. orphea* auct.]. Orphean Warbler.

Met with near Ain Mokra: clutches of four and five eggs taken on May 13 and 15, 1913 (R).

60. **Sylvia atricapilla atricapilla** (L.). Blackcap.

Noted at El Kantara in April: H. Meskoutine (nest with four pink eggs on April 19, 1912) and Bône (W). Common near Ain Mokra: nest with young and one egg, May 5: four eggs May 12 (R).

61. **Sylvia communis communis** Lath. Whitethroat.

Singing in gardens at Lambèse, where it probably breeds: nest with young at Ain Dahlia, Lac Fetzara, May 1, 1913 (J). Common at Ain Mokra: young flying on May 11 (R). Seen at Bône, April 24: also in song at H. Meskoutine (W).

62. **Sylvia melanocephala melanocephala** (Gm.). Sardinian Warbler.

Seen in the scrub above Lambèse, but not common (J). Common at Ain Mokra: clutch of three erythristic eggs taken on May 11, and one of four on May 13 (R). Common at Algiers and H. Meskoutine: eggs taken near Lac Fetzara on April 12, 1910 (W).

63. **Sylvia cantillans** Pall. Subalpine Warbler.

A pair identified at El Kantara on April 15, 1913 (J).

64. **Sylvia conspicillata conspicillata** Temm. Spectacled Warbler.

Seen at El Kantara and El Outaia in April. A nest with five young, which must have belonged to this species, brought in by an Arab at Bordj Saada on April 26 (J).

65. **Sylvia deserticola** Tristr. Tristram's Desert Warbler.

Not uncommon on the hillsides above Batna and Lambèse: a pair had an almost finished nest on April 28 (J). Noted at El Kantara, Feb. 11, 1906 (W). Common on the hillsides a day's march east of Khenchela, and evidently breeding on May 24 (R).

66. **Agrobates galactodes galactodes** (Temm.). Rufous Warbler.

In fair numbers at Biskra and El Outaia in April: frequently snared by Arab boys (J). Seen at Fontaines Chaudes, Biskra, April 11, 1911; also at Lac Fetzara, April 11, 1912 (W).

67. **Scotocerca inquieta saharæ** (Loche). Wren Warbler.

Met with locally in the plain of El Outaia, and more commonly between Biskra and Bordj Saada (J).

68. **Cisticola cisticola arquata** (Müll.). Fantail Warbler.

Breeds in the cornfields in the plain of El Outaia: nest with young on April 16. Also common in corn near Bordj Saada (J). Unfinished nest at Biskra in reeds on April 12, 1912; nest and young near Bône, April 12, 1910 (W). Very common near Ain Mokra: about a dozen nests between May 7 and 14, with clutches varying from three to seven in number (R).

69. **Crateropus fulvus fulvus** (Desf.). Algerian Bush-Babbler.

Met with in small numbers near Fontaine de Gazelles. More common near Bordj Saada: a nest with five fresh eggs on April 27 in zizyphus bush (J).

70. **Turdus viscivorus deichleri** Erl. North African Mistle-Thrush.

A few breed on the wooded hillsides from Batna to Lambèse. On April 28, 1913, a nest with three fresh eggs was found in a small ilex, only five feet from the ground, and on May 2, 1914, another nest, with three well-grown young, about 15 feet high in a similar tree (J). Met with on southern side of the Aurès range in February, but not common (W).

71. **Turdus philomelus philomelus** Brehm. (*T. musicus* auct.) Song-Thrush.

Extremely abundant at H. Meskoutine, February 25, 1906, feeding on the fruit of the wild olive (W).

72. **Turdus musicus** L. Redwing.

Together with preceding species, but less abundant. Also seen in the market at Algiers early in February (W).

73. **Turdus pilaris** L. Fieldfare.

A few at H. Meskoutine, end of February 1906 (W).

74. **Turdus torquatus** L. (subsp.?). Ring-Ouzel.

One seen on Djebel Azrak, in the Aurès range, February 15, 1906, and three more on the following day near Chir (W).

75. **Turdus merula mauritanicus** Hart. Moorish Blackbird.

Common in the oases of El Kantara, Biskra, and Sidi Okba, breeding among the palms and bushes. Fresh eggs and also young found on April 23. Blackbirds are also fairly common in the ilex scrub near Lambèse, and many nests with fresh eggs were found there about May 1, but whether they belong to this race or *T. m. algirus* is not certain (J). Breeding at El Kantara (W).

76. **Turdus merula algirus** (Mad.). Algerian Blackbird.

Breeding at H. Meskoutine (W). Common near Ain Mokra: several clutches of three or four eggs about May 7 (R).

77. **Monticola solitarius solitarius** (L.). Blue Rock-Thrush.

Scattered pairs in suitable localities. Noted at Bizot, also in the Taya gorge and on Djebel Mellah near El Outaia (J). Not uncommon: seen on an Arab mosque at El Kantara and at other villages: also at Constantine and on cliffs near Hammam Meskoutine (W).

78. **Monticola saxatilis** (L.). Rock-Thrush.

A male seen near Taya, April 8, 1911: also another in the theatre at Timgad, probably breeding (W).

79. **Œnanthe œnanthe** (L.). Wheatear.

A male at Biskra on March 27, 1910: also seen at H. Meskoutine, April 5, 1911, and at Bône, April 25, 1912 (W).

80. **Œnanthe deserti homochroa** Tristr. Saharan Desert Wheatear.

Met with between Biskra and Bordj Saada, but not north of the Col de Sfa (J). A pair west of Biskra, April 1910 (W).

81. **Œnanthe hispanica hispanica** (L.). Western Russet Wheatear.

Not common, but widely distributed: noted near Ain Djendeli, Lambèse, El Kantara and El Outaia. A nest with newly-hatched young at El Outaia on April 19; another with four fresh eggs in a hole in the side of a gully near Lambèse on April 28. The male at this nest had a white throat (J). A male at Fontaines Chaudes on March 28, 1910, and a pair at Taya in April 1911: in both cases black-eared (W). Both forms noted at Tebessa (R).

82. **Œnanthe lugens halophila** (Tristr.). Tristram's Warbler.

A good many pairs breed in the steep mud-banks of the dry water-courses at the foot of the hills south of El Kantara. As a rule the nests are placed in holes or crevices a few feet from the ground, but I have seen nests almost on the ground under boulders on a rock-strewn hillside, and in one case in a cleft between two big rocks. A wall of loose stones is built up in front of the nest, but the amount of material used is much less than in the case of *Œ. l. syenitica*. We were especially anxious to obtain well authenticated eggs of this species, as most of those in collections are quite unreliable. Fortunately the parent birds proved to be extraordinarily bold after the nest had been discovered, perching within a yard or two and even entering the nest-hole while we were still close at hand. The clutch varies from three to five in number, often only three, and it is not uncommon to find one infertile egg in the nest. The eggs are very pale bluish, not unlike those of *Œ. leucura*, but are frequently devoid of markings, or else they appear only on one or two eggs in the clutch. They are also decidedly smaller on the average, but large eggs of *Œ. lugens* approach closely to small eggs of *Œ. leucura*. The breeding season is variable: some birds have eggs by the end of March, and I have seen fledged young on April 21, but fresh or slightly incubated eggs, as well as young, were found between April 20 and 29 (J).

83. **Œnanthe leucura syenitica** (Heugl.). African Black Chat.

First met with on the hillsides between Batna and El Kantara: very common at the latter place and round the plain of El Outaia. This species constructs a regular breast-wall and sloping approach of loose flat stones, about two inches across, up to the nest, which is generally in some hole or crevice of a rock, but occasionally also in the steep mud-bank of a wady. Clutch usually four, sometimes five. Fledged young in the remarkable black and white juvenile plumage were met with at El Kantara on April 16, and fresh eggs from April 18 to 30 (J). Nest with young at Timgad on April 9, 1906, and fledged young at Fontaines Chaudes on April 11, 1912 (W).

84. **Saxicola torquata rubicola** (L.). Stonechat.

Not uncommon in the north, but not noted south of Constantine (J). Common in February at Biskra, El Kantara, H. Meskoutine and Kroubs (W). Common on hillsides near Ain Mokra: nest with five incubated eggs on May 7 (R).

85. **Saxicola rubetra** (L.). Whinchat.

Whinchats (subsp.?) were met with near Bordj Saada from April 26 to 28, and were also noted near El Outaia on April 17. They looked dark in colour and may have been migrants (J). A pair at Batna, April 8, 1910: also one at H. Meskoutine on April 19, 1911 (W).

86. **Phœnicurus ochrurus gibraltariensis** (Gm.). Black Redstart.

Common at El Kantara in February. Also noted at H. Meskoutine (W).

87. **Phœnicurus phœnicurus** (L.). Redstart.

Noted at Chetmah, near Biskra, March 30, 1910, and at El Kantara on March 31. Also many at Kroubs on April 17, 1910 (W). These probably were *P. p. phœnicurus* on migration, but a few seen among the ilex trees above Lambèse on May 2, 1914, were almost certainly *P. p. algeriensis* (J).

88. **Diplootocus moussieri** (Olphe-Gall.). Moussier's Redstart.

Common on the hills between Batna and Lambèse, and in small numbers north to Ain Djendeli and south to Biskra. The breeding habits of this bird are especially interesting on account of its two very dissimilar types of eggs. The blue eggs hardly vary at all, but some clutches of white eggs show a faint bluish tinge, while others are pure white. We devoted a good deal of time to this species, and were successful in finding some twenty-five nests, containing ninety eggs. Of these thirty-eight were white and the remaining fifty-two blue, so that the proportion of white eggs is higher than is generally supposed to be the case. The nesting sites varied considerably: many nests were found in juniper bushes at varying heights, from a few inches to three feet six inches; others were placed close to or actually on the ground, but generally sheltered by bushes. Among the more exceptional sites may be mentioned a hole in the side of a large block of stone, while one nest was actually placed in a hollow among the old matting which sheltered a row of beehives close to an Arab house! This nest was also noticeable in another way, for it contained five white eggs, the only clutch of five met with. The construction of all the nests was very similar, although some were more bulky than others. The foundation consists of large, coarse strips of juniper bark, or dead fibre, with some moss, bits of wool and feathers, lined thickly with thistledown, wool, bents, hares' fur, and feathers of various birds. When flushed from the nest the sitting-bird always proved to be the hen. The first clutch was taken on April 19 and the last by May 2, by which date several nests contained young (J). Noted at Biskra and El Kantara in February 1906: found nesting at Timgad in April, and a pair at Rouknia, near H. Meskoutine, on April 18 (W).

89. **Luscinia megarhyncha** Brehm. Nightingale.

Common at Philippeville, Hammam Meskoutine, and Lambèse (J). At H. Meskoutine on April 6 and at Lac Fetzara on April 12 (W). Common at Ain Mokra: eggs on May 7 (R).

90. **Dandalus rubecula** (L.). Robin.

Robins (subsp.?) were seen at Algiers, generally throughout the Aurès range, at El Kantara and Biskra in February 1906: also at H. Meskoutine in 1910 (W). Probably these were chiefly migrants from Europe.

91. **Prunella modularis** (L.). Hedge-Sparrow.

Noted in gardens near Algiers at the beginning of February 1906 (W).

92. **Troglodytes troglodytes kabylorum** Hart. Algerian Wren.

Noted at Ain Mokra, the gorge of the Rummel, and in the hills above Batna (J). In February at El Kantara: nests found at H. Meskoutine, where it is abundant (W). Common at Ain Mokra, nesting behind the loose strips of bark on the eucalyptus-trees. Clutches of four or five eggs, from May 7 to 13 (R).

93. **Chelidon rustica rustica** (L.). Swallow.

Generally distributed and common, breeding all over the country south to El Outaia and Biskra (J). Building at El Kantara on April 14 (W).

94. **Hirundo urbica meridionalis** Hart. Algerian House-Martin.

Also breeds in great numbers in some localities, such as Batna and Lambèse. At Ain Dahlia the nests were ready for eggs on May 1 (J). Clutches of fresh and incubated eggs at Ain Mokra on May 12 (R).

95. **Riparia riparia riparia** (L.). Sand-Martin.

Many at Chetmah, near Biskra, on April 10: also noted at Lac Fetzara on April 4 (W).

96. **Riparia rupestris** (Scop.). Crag-Martin.

Flocks of what appeared to be this species were noticed hawking about the high cliffs of the Oued El Kantara, April 20 (J): a flock of fourteen seen flying over a pool at Biskra, February 6, 1906: also noted at cliffs near Hammam Meskoutine in April (W).

97. **Apus melba melba** (L.). Alpine Swift.

Colonies breeding under the tiles of houses at Philippeville and also at Constantine (J). Noted at Bône, Philippeville, and Constantine, where it was nesting under the eaves of a shed (W).

98. **Apus apus** (L.).

Extremely common at Bône, and nesting in the weep-holes of the masonry (J). A flock of twelve passing over Timgad on April 8, 1910 (W).

[*Apus murinus* was not identified with certainty.]

99. **Caprimulgus ruficollis desertorum** Erl. Erlanger's Red-necked Nightjar.

A pair met with east of Khenchela on May 24. The testes of the male were the size of peas (R).

100. **Merops apiaster** L. Bee-eater.

Common: flocks had already arrived at El Guerrah on April 14. Breeds in the river-banks near St. Charles (J). Flocks passing north at Chetmah, near Biskra, on April 10; also at H. Meskoutine on April 19 (W).

101. **Merops persicus chrysocercus** Cab. & Hein. Saharan Bee-eater.

Seen in small flocks near Bordj Saada, April 27, 1914 (J).

102. **Upupa epops epops** L. Hoopoe.

Generally distributed but not numerous anywhere (J). Many at Biskra, frequenting the drains on March 27; also many at H. Meskoutine in April (W). Feeding young at Ain Mokra on May 8 (R).

103. **Coracias garrulus garrulus** L. Roller.

A few on the hillsides near Batna and Lambèse, April 28 (J).

104. **Picus vaillantii** (Malh.). Algerian Green Woodpecker.

Only met with among the big ilex-trees above Lambèse: nest-hole not quite finished on May 2 (J). Heard in Taya cork-oak woods, April 8, 1911 (W). Heard in wooded hillsides west of Tebessa (R.).

105. **Dryobates major numidus** (Malh.). Algerian Great Spotted Woodpecker.

Also noted in the Taya cork-oak woods on the same date (W). A Spotted Woodpecker (sp. ?) seen at Ain Mokra, May 2, 1913 (R).

106. **Jynx torquilla mauritanica** Rothsch. Algerian Wryneck.

A richly coloured bird, undoubtedly of this race, seen and heard at H. Meskoutine on February 26, 1906. Also noted on April 6 (W).

107. **Cuculus canorus** L. Cuckoo.

Many calling on the hills near Lambèse, April 19 (J). Only noted at Bône (W). Seen several times at Ain Mokra (R).

[As the Ain Mokra birds were met with in May, they must have belonged to the small Mediterranean form, *C. c. minor* A. E. Brehm.]

108. **Strix aluco mauritanica** (With.). Moorish Brown Owl.

A young bird, still in down, but with the primaries in quill, which had fallen from the nest in a eucalyptus wood at Ain Mokra, was found on May 8 in the possession of an Arab boy. Iris blue (R).

109. **Bubo bubo ascalaphus** Sav. North African Eagle-Owl.

My first acquaintance with this fine species was on April 18, 1913, when we came across a single bird perched on the edge of a recess about 20 feet high in the steep rock-wall of a gully in one of the ranges bordering the El Outaia plain. His big yellow eyes were wide open, but he remained still for some minutes before taking wing and flying overhead down the wady. The ledge had evidently been in use for some time, as the ground below was strewn with bones and fragments of pellets. In the following year another bird was flushed from a hole under a big boulder on a steep mountain-side on April 30, but this proved to be only a roosting place and showed no traces of breeding (J).

110. **Tyto alba alba** (Scop.). Barn-Owl.

The characteristic scream was heard in the dusk near Batna, April 18 and 19, 1914 (J). Also heard nightly at H. Meskoutine in February (W).

111. **Athene noctua glaux** (Sav.). Southern Little Owl.

Resident among the Roman remains at Lambèse (J). At Lambèse: one sitting on telegraph-post near Bône on April 23 (W).

112. **Otus scops scops** (L.). Scops Owl.

Generally distributed: heard at Lambèse, Ferme Dufourg and Biskra (J).

113. **Gyps fulvus fulvus** (Habl.). Griffon Vulture.

Not uncommonly seen on the wing in north-eastern Algeria, but less commonly in the south-east (J). A party of about twelve seen together on the ground near El Guerrah, February 5, 1906. At a cliff near H. Meskoutine, a small colony was found breeding. In 1911 half-grown young were moving about on the nesting ledges in April, but in 1912, on April 6, one nest contained a fresh egg, another an incubated egg, and a third a chick in down (W).

114. **Neophron percnopterus percnopterus** (L.). Egyptian Vulture.

Several pairs breed in the gorge of the Rummel at Constantine, and, not being disturbed, are very tame. Scattered pairs also nest on the hills near Ain Djendeli, near El Kantara and the ranges to the south (J). Breeding at El Kantara and in cliffs near H. Meskoutine (W). Common near Tebessa: also occasionally seen at Ain Mokra (R).

115. **Gypaëtus barbatus atlantis** Erl. North African Bearded Vulture.

I visited the eyrie on Djebel Metlili, from which a young bird and an addled egg were taken in 1911 (see Nov. Zool. xviii. p. 532), and also met with another south of El Kantara, which was occupied in 1913 (J). Immature and adult birds, the latter dropping bones, seen at El Kantara in February 1906, and again in April 1912 (adult only). Also noted at Tilatou and in the Taya gorge, April 1911 (W).

116. **Aquila chrysaëtus** (L.). Golden Eagle.

One seen near Djebel Taya, April 30 (J). Seen at cliffs near H. Meskoutine: nest empty, but lined with fresh sprigs of ash and terebinth, on April 18 (W).*

117. **Eutolmaëtus fasciatus fasciatus** (Vieill.). Bonelli's Eagle.

We had already seen individuals of this species patrolling the plain of El Outaia, and on April 20 found an eyrie in a small isolated cliff, which contained no fewer than three well-grown young, still in down. The clutch of this species generally consists of two eggs, occasionally one only. When first seen, one of the parents was standing on the nest and feeding the young in turn from the carcass of a Gundi (*Ctenodactylus gundi*) (J). A pair bred on a ledge of a low cliff near H. Meskoutine, and the nest contained two fresh eggs on February 26, 1906. Also noted at this locality in April 1910 and 1912: and at Lac Fetzara in April 1910 and March 1911 (W).

118. **Eutolmaëtus pennatus** (Gm.). Booted Eagle.

Seen at Ain Mokra several times in May (R).

119. **Buteo ferox cirtensis** (Lev.). African Buzzard.

A nest in a cleft of the precipitous side of a narrow gorge contained three fresh eggs on April 19, 1913, and three days later we found a second, accessible without the help of a rope, which contained the unusual number of four large young, still in down. Both these nests were in the ranges south of El Kantara. In 1914 the nesting site which contained four young in 1913, was again in use, but this time held only three young birds on April 30, still in white down (J). Either this or the preceding species seen at the Taya gorge and Constantine (W).

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* A large light-coloured Eagle flushed on May 6 at Ain Dahlia (R) was probably *Aquila rapax belisarius* Lev.

120. **Haliaëtus albicilla** (L.). Sea-Eagle.

A fine adult bird, with light head and white tail, seen at close quarters flying near the shore of Lac Fetzara at Ain Mokra on May 11, 1913, subsequently settling in the rushes (R).

121. **Circus æruginosus harterti** Zedl. North African Marsh-Harrier.

Several pairs breed in the reed-beds along the north shore of Lac Fetzara: a nest with three eggs found at Ain Dahlia on May 1, 1913. Also a pair evidently attempting to breed in a small marsh south of Ouled Rahmoun. Harriers (sp.?) were seen near Bordj Saada, April 26 to 28 (J). About three pairs near Ain Dahlia in 1911: also seen in 1910 and 1912 (W). A single incubated egg brought in by Arabs on May 15 from the west side of Lac Fetzara (R).

122. **Circus pygargus** (L.). Montagu's Harrier.

An adult male hung up on a tree near Algiers, February 1906 (W).

123. **Circus macrourus** (Gm.). Pallid Harrier.

One seen on the wing near Biskra on February 6, 1906 (W).

124. **Accipiter nisus punicus** Erl. North African Sparrow-Hawk.

Seen in the pine forest, Djebel Azrak, Aurès Mts., February 17, 1906: also in the Taya cork-oak forest in April 1911 (W).

125. **Milvus milvus** (L.). Red Kite.

Apparently two pairs breeding in range of cliffs near H. Meskoutine, April 6 and 18, 1912. Single birds also seen near Constantine, February 24, 1906, and near Les Lacs in April 1910 (W).

126. **Milvus migrans migrans** (Bodd.). Black Kite.

Common and widely distributed north of the plain of El Outaia, but less numerous to the south. Many pairs breed on Djebel Metlili (J). Migratory: not noted up to March 4, 1906, but several seen at El Kantara on March 31, 1910. As many as seventeen seen together on the wing at El Kantara: also in numbers at Constantine (W).

127. **Elanus cæruleus** (Desf.). Black-shouldered Kite.

One seen sitting on telegraph-wires and on the wing at Hammam Meskoutine, April 1911. The plumage is unmistakable: mantle and wings grey with black triangular patch on shoulders (W).

128. **Circaëtus gallicus** (Gm.). Short-toed or Snake Eagle.

Seen once or twice between El Kantara and El Outaia (J). A nest in an olive-tree, only seven feet from the ground, at H. Meskoutine in April 1911: also seen there in April 1912, and near Lac Fetzara (W).

129. **Falco columbarius regulus** Pall. Merlin.

One seen chasing House-Buntings at Biskra, February 7, 1906 (W).

130. **Falco naumanni naumanni** Fleisch. Lesser Kestrel.

Only identified with certainty at the gorge of the Rummel, Constantine, in April (J). Common at Constantine on April 9, 1910 (twenty-two sitting on one length of telegraph-wire), but not observed there on February 23.

131. **Falco tinnunculus** L. Kestrel.

Generally distributed and common. A nest in a hole of a high mud-cliff, contained four eggs on April 30, 1914 (J).

132. **Falco peregrinus pelegrinoides** Temm. Algerian Peregrine.

A nest with three half-incubated eggs taken at El Kantara, on April 3, 1910. From the slaty head and mantle, and lightly ticked fulvous breast of the Falcon, it must have been this species, although Lanners usually nest here. Also apparently breeds in the Taya gorge and on cliffs near H. Meskoutine (W).

133. **Falco biarmicus erlangeri** Kleinschm. Algerian Lanner.

Breeds in fair numbers in the rocks at El Kantara and in the mountain ranges which border the El Outaia plain. Remains of eggshells were lying beneath one eyrie which we found in a steep cliff on the evening of April 18, 1913, but as I could reach it with a nesting-stick, it seemed worth while to try for a possible addled egg. As luck would have it, this was obtained after a few minutes' "fishing," and then, to my astonishment, the Falcon slipped off the nest where she had been all the time, almost invisible in the dusk. There were also two recently hatched young in this eyrie. In 1914 the site was again occupied and young could be seen there on April 30. Another eyrie visited on April 25 contained four young in down, and the wings and breast-bone of a recently killed Kestrel showed that Hawks do sometimes "pick out Hawks' eyne" (J). Identified at El Kantara (W).

134. **Pandion haliaëtus haliaëtus** (L.). Osprey.

One seen in March 1911 by the shore at Bône, and a pair fishing close to the town on April 5, 1912 (W). One seen at the mouth of the river at Bône on May 13, 1913 (R).

135. **Phalacrocorax** sp.?

A flock of about twenty Cormorants or Shags seen flying over Lac Fetzara on May 1, 1913 (J). A flock seen on May 4, 1913, at Ain Mokra (R).

136. **Sula bassana** (L.). Gannet.

Fishing along shore west of Algiers in some numbers, end of January 1906: also noted at Bône in March 1911 (W).

137. **Ardea cinerea cinerea** L. Common Heron.

Met with occasionally in April even in the south: one on the Oued El Kantara, April 20, 1914; seven or eight on Lac Fetzara, May 1, 1913 (J). Seen at Biskra, April 12, 1912, H. Meskoutine, April 1911, and on Lac Fetzara, April 4, 1912 (W). Several on Lac Fetzara, May 4, 1913 (R).

138. **Ardea purpurea purpurea** L. Purple Heron.

One on Lac Fetzara, April 1910: also at Bône (W).

139. **Ardeola ibis ibis** (L.). Buff-backed Heron.

A flock of about forty seen on Lac Fetzara on May 2, and a breeding colony reported as still existing on the south side of the Lake (J). One shot in Oued Biskra, April 12, 1912: others seen on Lac Fetzara (W). Common near Ain Mokra (R).

140. **Egretta garzetta garzetta** (L.). Lesser Egret.

At Lac Fetzara, but less numerous than the preceding species, April 1912 (W). Ain Mokra (R).

141. **Nycticorax nycticorax nycticorax** (L.). Night Heron.

One seen on Lac Fetzara, April 1910 (W). Flock of six near Ain Mokra on May 4, 1913 (R).

142. **Ciconia ciconia ciconia** (L.). White Stork.

Locally very common where not persecuted. At Constantine at least a dozen nests could be seen from one point on the roofs of the houses in the Arab quarter. Near Ouled Rahmoun and by the line to Batna there are many nests in trees: one tree alone contained four nests, but probably some were unoccupied. Nests may also occasionally be seen on Roman ruins (J). First arrival noted on February 6, 1906, when a flock of eight passed over Biskra. In pairs on the nests at Constantine on February 24. Sometimes breeds on the roofs of French houses: three nests seen on the gables of one house. Rare in the Taya valley, but a small flock seen migrating there on April 19, 1912. Two clutches of four eggs found near Kroubs on April 24, one slightly and one considerably incubated. Abundant at Bône: seventeen nests counted in the town (W).

143. **Platalea leucorodia leucorodia** L. Spoonbill.

Three seen on the wing, and also subsequently feeding, on Lac Fetzara, April 24, 1912 (W).

144. **Botaurus stellaris stellaris** (L.). Bittern.

Heard booming on Lac Fetzara, April 4 and 23, 1912 (W).

145. **Phœnicopterus roseus** Pall. Flamingo.

Large flocks usually to be seen on "Les Lacs" (Chott Tinécilt, and Sebkret ez Zmoul) in April (J, W).

146. **Anas platyrhyncha** L. Mallard.

Some species of duck breeds on the Oued Biskra, near Bordj Saada, and the eggs are often taken by the Arabs. On April 27 we flushed half a dozen either of this species or the Gadwall from high reeds, but could not get a clear view. On Lac Fetzara the Mallard is plentiful (J). Common on Lac Fetzara: a couple also seen by the shore near Bône in March (W).

147. **Anas crecca** L. Teal.

At Lac Fetzara in March 1911 (W).

148. **Anas angustirostris** Mén. Marbled Teal.

Clearly identified at close quarters on Lac Fetzara, May 18, 1913 (J).

149. **Anas strepera** L. Gadwall.

Many on Lac Fetzara, April 11, 1911 (W).

150. **Spatula clypeata** (L.). Shoveler.

Very abundant on Lac Fetzara, March 1911 (W).

151. **Nyroca nyroca** (Güld.). White-eyed Duck.

On Lac Fetzara, near Ain Mokra, May (E. M. M.).

152. **Nyroca ferina ferina** (L.). Pochard.

Several drakes in full plumage near Ain Dahlia on May 1, 1913 (J).

153. **Nyroca fuligula fuligula** (L.). Tufted Duck.

On Lac Fetzara, April 11, 1914 and April 4, 1912 (W).

154. **Erismatura leucocephala** (Scop.). White-headed Duck.

One seen on Lac Fetzara, April 4, 1912 (W). Several near Ain Mokra, May 10, 1913 (R).

155. **Columba palumbus excelsa** Bp. Algerian Wood Pigeon.

A few in the woods from Batna to Lambèse (J). Very local: nineteen seen on one dead tree at H. Meskoutine on March 28 (W).

156. **Columba livia livia** L. Rock Dove.

A local resident, very numerous in some places. Great numbers breed in the wonderful labyrinth of cañons between Djebel Mellah and the Oued El Kantara, ranging thence over the plain of El Outaia (J). Common at El Kantara, Tilatou and the Taya Gorge (W).

157. **Streptopelia turtur arenicola** Hart. Desert Turtle Dove.

Plentiful in the Taya valley: also in the oases of Biskra and Sidi Okba (J). A few at Biskra early in February: H. Meskoutine in April (W). Several seen at east of Khenchela, May 24 (R).

158. **Streptopelia senegalensis ægyptiaca** (Lath.). Senegal Turtle Dove.

Breeds among the palms at Biskra. A clutch of two incubated eggs taken April 23 (J).

159. **Pterocles arenarius** Pall. Black-bellied Sand-Grouse.

Each of the Sand-Grouse has a characteristic note constantly uttered in flight, by which it can be easily identified. This species breeds on the rock-strewn slopes and barren levels of the plain of El Outaia in considerable numbers, but the area is so vast that it is difficult to find the nests. First egg picked up on April 20 (J). Seen near Biskra, April 10 (W).

160. **Pterocles alchata alchata** (L.). Pintail Sand-Grouse. Met with at Bordj Saada (J).

161. **Pterocles senegallus senegallus** (L.). Senegal Sand-Grouse.

Innumerable small flocks of this species at Bordj Saada on April 27. Although this bird is found in such numbers and has such a wide range, the number of eggs in collections is exceedingly small. Mr. Pearson took some clutches in Sind in 1895 in mid-May: Mr. A. G. Tomlinson obtained a clutch near Bussorah on June 21, 1911, and the Tring Museum contains a single egg from Mesopotamia taken on May 15. Tristram (Ibis, 1860, p. 71) states that he obtained "only one nest," and makes some remarks on the eggs, but no specimens appear to have been included in his collection. With this possible exception I am not aware of any eggs having been previously taken in Africa in a natural state, though they have been laid in confinement, and perfect eggs have been taken from the oviduct. We were fortunate in discovering a pair or two breeding in the southern part of the plain of El Outaia, and a nest with two eggs was found on April 15, but unfortunately one was broken by accident. The other is typical and measures 41·8 × 28·2 mm. (J).

162. **Caccabis petrosa petrosa** (Gm.). Barbary Partridge. Tolerably common in the scrub on the hills from Batna to Lambèse: an incomplete clutch of five eggs found May 2, 1914 (J). General in the Aurès range in February: also at H. Meskoutine, where a clutch of four eggs was taken April 7, 1911 (W).

163. **Caccabis petrosa spatzi** Reichw. Spatz' Barbary Partridge.

This desert form is met with sparingly from El Kantara to Bordj Saada, and several nests with ten or twelve to fifteen eggs were found among bushes on hillsides and dry watercourses between April 22 and 27 (J).

164. **Coturnix coturnix coturnix** (L.). Quail.

From April 15 to 22, 1913, a strong migration of Quail was in progress at El Kantara, and great numbers were shot while the corn was being cut. Clutches of fresh and incubated eggs were also mown out on April 17, and probably many breeding birds are killed at such times. Among a bunch of some fifty birds which I examined on April 16, were one or two birds of the year. In 1914, migration was practically over by April 20. Messrs. Rothschild and Hartert state that this species breeds at least as far south as Batna and Djebel Mahmel, but it also nests commonly at El Outaia, and I have seen fresh eggs taken at Biskra on April 22 (J).

165. **Rallus aquaticus aquaticus** L. Water-Rail.

At Lac Fetzara, April 11, 1911 (W). [*Porzana porzana* (L.) was also met with in the Tunis market on March 7, 1906 (W).]

166. **Crex crex crex** L. Corncrake.

A few pass through on migration with the Quail. Several were shot at El Outaia on April 16, and one on April 21 (J).

167. **Gallinula chloropus chloropus** (L.). Waterhen.

One seen on a tiny reed-covered pool near the Oued El Kantara on April 29 (J). None seen on Lac Fetzara, but a clutch of seven incubated eggs were brought in by an Arab from the west side of the lake on May 15 (R).

168. **Fulica atra atra** (L.). Coot.

Breeds in enormous numbers at Lac Fetzara, where the Arabs collect thousands of eggs for food. In consequence, most of the nests seen on May 1, and even later, contained from one to three eggs, and only a few had full clutches. Although some clutches have dark red-brown spots, instead of the usual blackish markings, there seems to be no evidence that *F. cristata* breeds on the Lake (J, W, R).

169. **Porphyrio cærulea** (Vandelli). Purple Gallinule.

Although not nearly so common as the Coots, Purple Gallinules are nevertheless found in fair numbers on Lac Fetzara, and are not at all shy. In a day's work some fifteen or twenty birds may be flushed from the rushes and reed-beds. Occasionally one may be seen perched on the top of lofty reeds, looking very much out of place as it grasps them with its enormous pink feet. Messrs. Wallis and Pearson took clutches on April 23 and 24, and newly hatched young were found by Jourdain on May 1; while eggs were also found on May 4, and young and eggs from the 10th to the 14th by Messrs. Ratcliff and Murray. The nests seem to be more built up above the water than those of the Coot and often have reeds lying across them (J, W, R). Young about two days old have a strong curved bill, reddish flesh at the base, a black spot at the beginning of the feathers on the upper mandible, rest of bill white, black-tipped, down black all over, top of head nearly bald and soft, showing red flesh. Iris dark brown, feet reddish flesh: small white curved claw $\frac{1}{16}$ in. long on "thumb" where bastard wing is (R).

170. **Megalornis grus grus** (L.)? Crane.

A flock of large slow-flying slaty grey birds, probably this species, seen north of El Guerrah on February 5, 1906 (W).

171. **Houbara undulata undulata** (Jacquin.). Houbara Bustard.

Fresh eggs were shown to me at Biskra, which had been brought in by Arabs some time before April 25 (J). Two were seen to pitch in standing barley at Chetmah, near Biskra, April 10, 1912 (W).

172. **Burhinus œdicnemus saharæ** Reichw. Saharan Stone-Curlew.

Heard in the Bled Salaouine and the plain of El Outaia. An egg was brought in by an Arab at El Outaia on February 3! and a clutch of two much incubated eggs taken on April 24 (J). A pair near Tebessa (R).

173. **Glareola pratincola pratincola** (L.). Pratincole.

Some thirty or forty birds scattered over the baked mud-flats on the west of Lac Fetzara on May 14, but no sign of nesting (R).

174. **Charadrius dubius** Scop. Little Ringed Plover.

Met with in some numbers in the Oued El Kantara, evidently breeding (J). A pair at Fontaines Chaudes, Biskra, on April 11; in pairs, Oued Biskra, April 12; several pairs apparently nesting in the river-bed at H. Meskoutine in April (W).

175. **Charadrius alexandrinus** L. Kentish Plover.

A pair haunted a sandy patch in the desert near Bordj Saada: apparently breeding on April 28 (J). A single bird with a ruddy crown at Biskra, April 11. Also breeds on the sea-shore near Bône: nest scraped out, April 25, 1912 (W). Clutch of three eggs taken on west side of Lac Fetzara, May 15, 1913 (R).

176. **Charadrius apricarius** L. Golden Plover.

Flocks at Chott Tinécilt, February 5, 1906; also in Tunis market (W).

177. **Vanellus vanellus** (L.). Lapwing.

Many on swampy ground north of El Guerrah, near Constantine and Les Lacs early in February: also in Algiers market (W).

178. **Himantopus himantopus himantopus** L. Black-winged Stilt.

Seen at Ain Dahlia, May 4, 1913 (R).

179. **Gallinago gallinago gallinago** (L.). Common Snipe.

In Algiers market, end of January: also seen near Kroubs, February, and near Bône in April (W). [*Limnocryptes gallinula* also seen in Tunis market in March (W).]

180. **Scolopax rusticola** L. Woodcock.

In Algiers market, end of January 1906 (W).

181. **Erolia alpina** (L.). Dunlin.

Flocks at Chott Tinécilt, February 1906 (W).

182. **Tringa hypoleuca** L. Common Sandpiper.

Two seen in the Oued El Kantara, April 29 (J). Two or three pairs at Bône, April 6: also seen at H. Meskoutine on April 19 (W).

183. **Tringa ochropus** L. Green Sandpiper.

One frequented a drain at Biskra, February 1906 (W).

184. **Tringa totanus** (L.). Redshank.

Two seen by the Oued Biskra, near Bordj Saada, April 27 (J). Apparently this species, in numbers at Lac Fetzara, April 4, 1912 (W).

185. **Numenius arquata** (L.). Curlew.

Common near Lac Fetzara, April 4, 1912 (W).

186. **Hydrochelidon nigra nigra** (L.). Black Tern.

Several seen on Lac Fetzara, May 4, 1913. A white-rumped black Tern seen on May 10 was probably *H. leucoptera* (R).

187. **Hydrochelidon leucopareia leucopareia** (Temm.). Whiskered Tern.

Early in the morning of May 1, 1913, a large flock of these Terns was seen resting on the tops of a patch of high reeds near Ain Dahlia, where they had probably spent the night. Later in the day I saw many hawking over the lake (J). None on April 4, but many on April 24 (W). Very common near Ain Mokra (R).

188. **Sterna hirundo** L. Common Tern.

A single bird with an injured foot, seen several times between April 27 and 28 at Bordj Saada (J).

189. **Larus melanocephalus** Temm. Adriatic Gull.

Seen off Bône, March 1911: also at the marsh near Lac Fetzara, April 4 (W).

190. **Larus argentatus cachinnans** Pall. Mediterranean Herring Gull.

A few pairs about the harbours at Philippeville and Bône in April and early May (J). Noted at Bône, April 3, and Philippeville, April 26 (W).

191. **Larus fuscus** L. Lesser Black-backed Gull.

Seen off Algiers, January 30, 1906: also near Bône, April 5, 1912 (W).

192. **Hydrobates pelagicus** (L.). Storm-Petrel.

Three or four seen near the boat, off Philippeville, April 26, 1912 (W).

193. **Puffinus kuhlii kuhlii** (Boie). Mediterranean Shearwater.

Both large and small species of Shearwater were seen at sea off the Algerian coast, but the former only in small numbers, on April 13 (J).

194. **Puffinus puffinus yelkouan.** Levantine Shearwater.

Much commoner than the preceding (J). Shearwaters (sp.?) noted April 3 (off Bône), April 26 (Philippeville) (W).

195. **Colymbus cristatus cristatus** L. Great Crested Grebe.

Common on Lac Fetzara in March 1911: also noted April 4, 1912 (W).

196. **Colymbus nigricollis nigricollis** (Brehm). Black-necked Grebe.

In full breeding plumage and probably nesting on Lac Fetzara, April 14, 1911 (W). Three watched and identified with certainty on May 10, 1913. No nests found (R).

197. **Colymbus ruficollis** Pall. Dabchick.

Very plentiful near Ain Dahlia at the beginning of May, when its bubbling notes were constantly heard, and clutches of fresh eggs, from five to seven in number, taken (J). Beginning to lay on April 23, nests with one and two eggs (W). Breeds near Ain Mokra: eggs from May 10 (R).

VIII.—*Notices of recent Ornithological Publications.*

Ghidini on rare Alpine Birds.

[Aquile ed Avvoltoi nelle Alpi. Angelo Ghidini. Riv. Ital. Ornitol. iii. 1914, pp. 81–83, Tav. ii.]

A short note records the nesting of *Aquila fulva* (=*A. chrysaëtus*) in the Leventina valley, the occurrence of *Gypaëtus barbatus* in the Val d'Aosta and of *Querquedula formosa* in Canton Ticino, all localities on the Italian side of the Alps, and all species but rarely met with in northern Italy.

Goeldi on the Birds of Switzerland.

[Die Tierwelt der Schweiz in der Gegenwart und in der Vergangenheit. Von Dr. Emil August Göldi, Professor der Zoologie in der Universität Bern. Band i. Wirbeltiere, mit 2 Karten und 5 farbigen Tafeln. Pp. xvi+654. Bern (Francke), 1914. 8vo.]

Dr. Goeldi, as many of our Members will doubtless recall, spent the greater part of his life at Para in Brazil, where he built up a great Zoological Museum which was subsequently named after him. He has now returned to Europe to spend the rest of his life in his native city of Berne, where he has been appointed Professor of Zoology at the High School.

The present volume contains an account of the Vertebrate fauna of Switzerland from a bionomial and geographical standpoint, and is addressed to students of the high schools and universities of Switzerland. In the third chapter, pp. 261–406, will be found an account of the avifauna, based chiefly on the works of Fatio. The number of species recognized is 358, and these are discussed at length from the point of view of their status and geographical relations. A useful table is given showing the names used in the various editions of Fatio's works as compared with those in the British Museum Catalogue ; then follows a general review, in which the species are individually treated of at some length, and coupled with their most nearly related forms in other parts of the world.

To anyone travelling or sojourning in Switzerland, we can thoroughly recommend this work as a reliable guide, not only to the birds but to the other groups of Vertebrates inhabiting central Europe.

Grinnell on a new Red-winged Blackbird.

[A new Red-winged Blackbird from the Great Basin. By Joseph Grinnell. Proc. Biol. Soc. Wash. xxvii. 1914, pp. 107–108.]

Mr. Grinnell adds one more form to the large number of already named subspecies of *Agelaius phœniceus.* He calls it *A. p. nevadensis,* and states that it inhabits the State of Nevada and parts of north-eastern California which lie between the Rocky Mountains and the Sierra Nevada, where the climate is dry and desert-like.

Mathews on Australian Birds.

[The Birds of Australia. By Gregory M. Mathews. Vol. iii. pt. 6, pp. 445–512, pls. 190–199 (June 1914); vol. iv. pt. 1, pp. 1–80, pls. 200 209 (October 1914).]

In these parts, concluding the Ardeiformes and proceeding to the Anseriformes, Mr. Mathews continues his careful researches into the synonymy of the various forms, and, as usual, gives an admirable summary of their life-histories, for the elucidation of which he has been successful in enlisting a still greater of correspondents. The illustrations leave little to be desired.

Only two new genera are proposed, and no new species or subspecies, but our readers should consult in this connexion the 'Austral Avian Record' and the author's last 'List of Australian Birds,' besides 'Novitates Zoologicæ.' The new genera are *Ctenanas* for *Leptotarsis* Eyton, preoccupied under the form *Leptotarsus* Guerin, and *Hemigarzetta* for *Herodias eulophotes* Swinhoe; but the former had been more doubtfully suggested in the Austral Avian Record (vol. ii. p. 90). Mr. Mathews also accepts *Radjah* Rchb. for the White-headed Sheld-Duck, and *Casarca* Bp. for the Mountain Duck, giving in both cases the differences which he thinks entitles them to be separated from *Tadorna.* Similarly he has now *Dupetor* and *Ixobrychus* for *Ardeiralla* and *Ardetta* respectively.

He withdraws the proposed genus *Toburides* for the fine red Mangrove-Bittern, and the following subspecific names:—*tormenti* for the N.W.A. Blue Reef Heron, *roberti* for W.A. Black Swan, *hamiltoni* for the N.W.A. Pied Goose, *georgi* for the W.A. Cape Barren Goose, *westralis* for the W.A. Sheld-Duck, both *peroni* and *gouldi* in favour of (*javanica*) *australis* for the "Whistling Duck."

He separates the blue and white forms of *Ardea sacra*, as some other writers have done, but drops the name *sacra* Gm., which he believes to have been based on a hybrid; his specific names stand as *matook* (Vieill.) and *greyi*. He considers *Ardea aruensis* Gray = *A. picata* Gould = *A. flavirostris* Sharpe, and calls the Australian bird *aruensis flavirostris*; he identifies *A. maculata* Lath. with the Australian Night Heron.

In the beginning of vol. iv. the disquisition on the Anseriformes will be found most useful by students of the group; and it should be noted that the author inclines to consider the peculiar Australian genera of Antarctic origin: further on, a very full account is given of our earliest records of the Black Swan.

North on the Birds of New South Wales.

[Zoology of New South Wales. The Birds. By Alfred J. North, C.M.B.O.U., C.M.Z.S. Extr. New South Wales Handbook, British Association for the Advancement of Science, 1914, pp. 294–313.]

This short review of the avifauna of New South Wales was prepared for the British visitors attending the Meeting of the British Association which took place in Australia last year, by Mr. North, of the Australian Museum in Sydney. Though containing no novel facts, it was no doubt most valuable to the Members of the Association who took part in the Meeting. It is illustrated by a plate containing small but clear representations of some of the more typical Australian forms of bird-life.

Roberts on South African Birds.

[Notes on Birds in the Collection of the Transvaal Museum, with descriptions of several new subspecies. By Austin Roberts. Annals of the Transvaal Museum, iv. 1914, pp. 169–179.]

This short paper contains a number of emendations and corrections with regard to species and subspecies of birds occurring in south Africa, and should be carefully studied by all those interested in the avifauna of that region. A number of new forms are described belonging to the genera *Lophoceros*, *Rhinopomastus*, *Anthus*, *Anthoscopus*, *Tarsiger*, *Centropus*, and *Chlorophoneus*.

Schiøler on the Races of the Eider-Duck.

[Lidt om Ederfuglen, *Somateria mollissima*, L. og nogle af dens Racer. Af E. Lehn Schiøler. Dansk ornith. For. Tids. viii. 1914, pp. 233–276, 13 text-figs.]

This is a supplement or a continuation of a paper published by the author in the same journal in 1908, and contains his more recent views on the distinguishable races of the Eider-Duck. Mr. Schiøler has been able to assemble together a very large mass of material, and has thoroughly worked it out. He has measured and reduced to an average the dimensions of a large number of birds of different ages and sexes belonging to the Norwegian, Faeroese, and Icelandic races of the Eider, and has compared them with the typical race from Sweden and Denmark.

From his observations and measurements it appears that he is prepared to recognise the Icelandic, Faeroese, and Norwegian (west and north-west) Eiders as sufficiently distinct from the typical Swedish and Danish birds to be regarded as subspecies, and for these he adopts the names first proposed by Brehm, viz., *Somateria mollissima islandica*, *S. m. faeroeensis*, and *S. m. norvegica*. The differences between these three forms are fully detailed and illustrated in the memoir, which should be consulted by all who are interested in the subject.

Seligmann and Shattock on Spermatogenesis in the Mallard.

[Observations made to ascertain whether any relation subsists between the seasonal assumption of the "eclipse" plumage in the Mallard (*Anas boscas*) and the functions of the testicle. By C. G. Seligmann, F.Z.S., and S. G. Shattock Proc. Zool. Soc. 1914, pp. 23 43, text-figs. 1-6.]

The object of the observations and experiments described in this paper were to endeavour to ascertain what relations existed between the periods of sexual activity of the testicles of the Mallard and of the plumage-changes, and whether these two phenomena had any causal relation to each other.

Two series of observations were undertaken. Of these the first consisted in the simultaneous examination of the plumage and the condition of the testes in a series of Wild Ducks during any month in the year; the other of observations on Wild Ducks which had been castrated.

The conclusions arrived at are that the periods of activity and non-activity of the testes do not coincide with the two seasonal changes of plumage. The testes normally attain their maximum size in March or April, while the eclipse plumage is assumed in July and passes off in September. If, however, castration is carried out during the months when the testes are assuming or have assumed their functional activity, the assumption of the eclipse plumage is delayed, and in some cases is not assumed at all. Great difficulty, however, was found in completely performing the operation of castration, and in almost all birds examined, which had been previously so treated, small nodules or grafts of regenerated testicular tissue were found.

Shufeldt on the Eggs of Humming-birds.

[Reder og Aeg af Nordamerikanske Kolibrier (Trochili). Af R. W. Shufeldt. Med Tavle ii.-viii. Dansk ornith. For. Tids. viii. 1914, pp. 187-195.]

The veteran American ornithologist Dr. Shufeldt has written a general account of the nests and eggs of the Humming-birds of North America for the Danish Ornithological Journal. The photographs which illustrate the paper are apparently taken by the author himself from a collection of nests with the eggs *in situ*. They represent examples of the eight species found within the borders of the United States and chiefly in California.

Swarth on Arizona Birds.

[A distributional list of the Birds of Arizona. By Harry S. Swarth. Cooper Ornithological Club. Pacific Coast Avifauna, number 10. Pp. 1–133. Hollywood, Cal., 1914. 8vo.]

For some years past the author of this work has been engaged in field-work among the birds of the State of Arizona, which we may remind our readers lies just to the east of California and to the north of the Mexican boundary-line, in the south-western part of the United States. Throughout the greater part of Arizona, which is nearly equal in area to the whole of the British Isles, desert conditions prevail, and the rainfall is probably less than in any State in the Union.

Notwithstanding this the author has been enabled to compile a list of 362 species and subspecies occurring within the State. With each of these is given a brief outline of the status or method of occurrence, as well as of the distribution within the State. An analysis of the avifauna and a discussion of the life-zones, illustrated by a map, follows the list, and the whole is completed by a careful bibliography, the titles of which are arranged chronologically; the first one of these, by William Gambel, only dates from 1843, showing how comparatively recent the exploration of this State has been. The work appears to have been very accurately done, and will be of great service to all workers in North American ornithology.

Williams on the Birds of Sarawak.

[Some notes on Birds in Sarawak. By R. B. Williams. Sarawak Museum Journal, ii. 1914, pp. 79–98.]

This short paper contains some valuable field-notes on Bornean birds which had been added to a series of accurate paintings of the birds themselves made by Mr. Williams during a three years' residence in Sarawak. They seemed to the Curator of the Sarawak Museum, Mr. J. C. Moulton, well worthy of publication, and they will no doubt be found useful by students of Malayan ornithology.

The Auk.

[The Auk. A quarterly Journal of Ornithology. Vol. xxxi. nos. 1–4. 1914.]

This volume of the 'Auk' opens appropriately with a most eloquent appreciation of our late Editor, Dr. P. L. Sclater, from the pen of one of his oldest surviving friends and contemporaries, Dr. Daniel Giraud Elliot, who is now living in New York and working at the American Museum of Natural History. He describes how he first called on Dr. Sclater and made his acquaintance in 1859, shortly after he had been elected Secretary of the Zoological Society, and how he saw him constantly from then onwards, whenever he had occasion to come to England. The memoir is steeped throughout with veneration and reverence for the great men of the zoological world of the Victorian era, and it is far the most touching tribute to the memory of Dr. Sclater which has yet been published.

Mr. R. C. Murphy, who made a voyage in a New Bedford whaling-brig to South Georgia in 1912–13, brought back some 500 skins of sea-birds from that remote island to enrich the collections of the American Museum in New York and of the Brooklyn Museum as well. It will be remembered that he sent an interesting photograph of a flock of various species of Petrels and Albatrosses to the 'Ibis' of last April. He now (p. 429) contributes to the pages of the 'Auk' a general account of his adventures and observations, illustrated with many photographs of sea-birds *. He also proposes (p. 13) to add another species of Petrel (*Æstrelata chionophara*, sp. n.) to the three already described from Trinidad Islet in the south tropical Atlantic: this seems, perhaps, a rather questionable proceeding, as only one example of the new species was obtained, and there can be no doubt that the plumages of the various members of this genus are far from being properly understood as yet.

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* A somewhat popular account, more fully illustrated, will be found in the Brooklyn Museum Quarterly, i. 1914, pp. 83–110.

In a third paper (p. 526) he reviews, in collaboration with Mr. J. T. Nichols, the forms of the genus *Phœbetria*, of which until comparatively recently but one species was recognized. In this note the authors propose a new name for the Sooty Albatross of the west coast of America, which sometimes wanders as far north as the coast of Oregon. It was originally named *Diomedea fusca* by Audubon, but as this specific name is preoccupied they propose to designate it *Phœbetria palpebrata auduboni*, bringing the number of named forms of the genus up to six.

An interesting point is made by Mr. J. D. Figgins (p. 62), who shows that Gambel's Quail, which has been introduced into the western part of the State of Colorado, and has there increased and multiplied and become a common bird, has, as compared with the typical birds from California, whence we may presume it was originally brought, undergone marked changes in coloration as well as in size. Are we justified, then, in giving this artificially and recently introduced race a new name? Such action was certainly taken in the case of the Bermuda Goldfinch (*cf.* Kennedy, Bull. B.O.C. xxxiii. 1913, p. 33).

All ornithologists interested in moult and plumage change should read an excellent account (p. 293), given by Dr. J. Dwight, of this phenomenon in the Scoter Ducks. It is illustrated by a coloured plate of the heads of the three American and three Old-World species, carefully prepared from fresh specimens and showing the coloration of the curious knobs and protuberances so characteristic of the birds of the genus *Œdemia*. These, as well as the adult coloration of the legs and feet, begin to appear during the first winter.

Two interesting facts are brought forward by Dr. Dwight and are believed to be entirely new discoveries. In both *Œ. americana* and the corresponding *Œ. nigra* of Europe, the outer primary is very strongly emarginated on the inner web. The same feather in the young bird is normal and not emarginate, and a young *Œ. nigra* or *Œ. fusca*, in whatever plumage it may be, can always be detected by this means. In the other species, curiously enough, this distinction does not hold good. Dr. Dwight also asserts that in addition to the usual post-nuptial moult in August, when all the feathers including the remiges are changed, there is partial prenuptial moult in March or April, when the body- and tail-feathers are changed but not the remiges. This is stated to be true for all the species so far as Dr. Dwight has been able to discover, and has been entirely overlooked up to now.

Mr. A. H. Wright, who has written much on the former history of the Passenger Pigeon, has now turned his attention to the Turkey and discusses in a long article, pp. 334 and 463, the early history of this bird and its introduction and domestication in Europe. It is said to have been served at the marriage feast of Charles IX. of France in 1570, and this one of the earliest notices of its being mentioned in Europe.

It has long been known that the stomach of the Tanagrine genus *Euphonia* was quite abnormal, and the late Mr. W. A. Forbes first gave a correct description of the anatomical facts. These are briefly, that instead of a muscular ventriculus or gizzard, the Tanagers of this genus possess only a flabby thin-walled sac which runs direct from the proventriculus to the small intestine.

Mr. Alex. Witmore, who has lately been employed on field-work for the Biological Survey of the United States in Porto Rico, suggests that the absence of all traces of the muscular gizzard is due to the fact that the species found in that island, *Euphonia* or *Tanagra sclateri*, feeds exclusively on mistletoe-berries of the genus *Phoradendron*, clumps of which are common locally in the forest of the island. The seed passes through the body of the bird unchanged, and the glutinous berry surrounding it forms the sole nourishment of the bird and renders unnecessary the presence of a muscular gizzard.

A number of papers of more local interest, such as those on the birds of districts in the State of Alabama by Messrs. Golsan and Holt, Colorado by Messrs. Rockwell and

Witmore, Oklahoma by Mr. W. W. Cooke, and Florida by Mr. R. W. William, add greatly to the value of the volume, while Mr. R. M. Strong writes an "intensive study" of *Larus argentatus* on Lake Michigan. Mr. E. S. Cameron, M.B.O.U., has a readable paper on *Archibuteo ferrugineus* and its nests in Montana, which is illustrated with some fine photographs. Finally we must mention an account by Mr. J. C. Phillips of his journey up the Blue Nile to Sennaar, with which is a coloured illustration of his new Nightjar, *Caprimulgus eleanoræ.* Some doubt is cast on the validity of this new species by Mr. Butler in the present number of 'The Ibis' (p. 181).

The Australian Zoologist.

[The Australian Zoologist. Issued by the Royal Zoological Society of New South Wales. Edited by Allan R. McCulloch, Zoologist, Australian Museum. Vol. i. part 1. Sydney, June 1914. 8vo.]

The Zoological Society of New South Wales, which owns and manages the Zoological Gardens of Sydney, has decided to issue this serial publication "to contain articles of scientific and general interest pertaining to zoology," and the first number has now reached us.

Among other papers there are several of interest to ornithologists. Mr. L. Harrison suggests that a study of the Mallophaga, those curious lice-like parasites which are almost entirely confined to avian hosts, many throw some light on the phylogeny and relationships of the various groups of birds, and gives some interesting instances of the curious facts in regard to the distribution of the same species of parasite on various species of hosts.

A short article by Mr. Basset Hull, illustrated by some photographs, tells us what has been done, and also what more should be done, in regard to Government sanctuaries and reserves for bird-life in New South Wales; and finally Mr. Walter W. Froggatt writes a short note on some of the birds noticed by him on the Saltbush plains of the north-western parts of New South Wales.

Avicultural Magazine.

[Avicultural Magazine. Third series. Vol. v., Nov. 1913 to Oct. 1914.]

The fifth volume of the 'Avicultural Magazine,' under the energetic editorship of Mr. Hubert D. Astley, fully maintains its acknowledged excellence both in the matter and in the illustrations, which latter have always been a prominent feature. In this respect the Society has a great advantage in possessing an editor as facile with his brush as with his blue pencil, as is shown by the two charming plates of *Ægithaliscus erythrocephalus* and *Æthopyga seheriæ*, which adorn the first and third numbers of the present volume. There are several other coloured plates by Mr. Goodchild and a number of interesting photographs by Mr. H. Willford, among which we would draw special attention to those of the Oyster-catcher on pages 45 and 47, the Meadow-Pipit on p. 310, and the Crowned Crane on p. 254.

It is impossible in the space at our disposal to mention all the articles of real merit contained in the volume, but we would draw attention to some of the more interesting. Mr. Collingwood Ingram contributes an account of his father's efforts to introduce and acclimatize the Greater Bird of Paradise into the West Indian island of Little Tobago, which he purchased for this purpose. It is not at present possible to state with certainty whether the birds have yet bred there, but there is every hope of their doing so. Mr. F. E. Blaauw writes an account of how he obtained a pair of the rare South American Parrot *Hemignathus leptorhynchus* in southern Chile, and how with infinite difficulty he transported them across the continent by the Trans-Andean railway to Buenos Ayres, and thence to his aviaries at Gooilust, where they have since bred.

A difficult task was also that of Mr. H. K. Job, the State Ornithologist of Connecticut, U.S.A. He made a journey to the prairies of Manitoba in order to obtain a supply of the young wild ducks of various species. In his article (pp. 64, 99) he describes how he hatched out under hens, and with an incubator, large numbers of eggs, taken when natural incubation had proceeded to a large extent, and how he successfully reared a number of young ducklings which he was afterwards able to safely land in Connecticut.

Mr. Stuart Baker contributes two articles on the habits of the Indian Pigmy Falcon (*Microhierax melanoleucus*) and the Serpent Eagle (*Spilornis cheela*), both of which he kept in semicaptivity in Assam.

There are many other articles dealing with various aspects of aviculture and including some of great practical use to its votaries, and we may conclude by noticing a most useful glossary of the various English names applied to the many species of Parrots, contributed by Dr. E. Hopkinson.

List of other Ornithological Publications received.

Murphy, R. C. Cruising in the South Atlantic. (Brooklyn Mus. Quarterly. Vol. i. No. 2, July 1914.)
Austral Avian Record. (Vol. ii. Nos. 5, 6. London, 1914.)
Avicultural Magazine. (3rd Series, Vol. vi. Nos. 1, 2. London, 1914.)
Bird Lore. (Vol. xvi. Nos. 5, 6. Harrisburg, 1914.)
Bird Notes. (New Series, Vol. v. Nos. 9–12, Ashbourne, 1914.)
British Birds. (Vol. viii. Nos. 5–7. London, 1914.)
Bulletin de la Société Zoologique de Genève. (Tome ii. Fasc. 1-3, 1914.)
Californian Fish and Game. (Vol. i. No. 1. San Francisco, 1914.)
Canada, Geol. Survey. Dept. of Mines. (Museum Bulletin No. 2. Ottawa, 1914.)
Condor. (Vol. xvi. No. 4. Hollywood, Cal. 1914.)
Emu. (Vol. xiv. pt. 2. Melbourne, 1914.)
Irish Naturalist. (Vol. xxiii. Nos. 10–12. Dublin, 1914.)
Scottish Naturalist. (Nos. 34–36. Edinburgh, 1914.)
South Australian Ornithologist. (Vol. i. pt. 4. Adelaide, 1914.)

IX.—*Letters, Extracts, and Notes.*

The following letters have been received :—

Sir,—In the notice ('Ibis,' July 1914, p. 516) of Dr. J. C. Phillips's paper "Two new African Birds," Proc. Biol. Soc. Washington, xxvi. 1913, pp. 167–8, it is mentioned that "two supposed new forms are described—*Caprimulgus* *eleanoræ* from Fazogli, and *Passer domesticus chephreni* from Giza, near Cairo."

As regards *Caprimulgus eleanoræ*, I have just received from Dr. Phillips the coloured plate of the bird which appeared in 'The Auk,' vol. xxxi. pl. xiii., April 1914, on which Dr. Phillips has written "The plate is too light and too brown, the bird is blacker."

I do not know with what material Dr. Phillips compared his bird before describing it, but had he availed himself of the opportunity of examining my collection while in Khartoum he would have found the same bird, from the same locality, and could have ascertained "the unknown characters" of the male, which has large subterminal white spots on the two outer rectrices. *Caprimulgus eleanoræ* does not appear to me to differ in any detail of plumage or measurements from *C. trimaculatus* (Swains.) (=*C. lentiginosus* Smith=*C. tristigma* Rüpp.), with which I unhesitatingly identify it, after having compared Fazogli birds with skins at the British Museum and at Tring.

Dr. Phillips's statement that the bird is "most nearly like *C. monticola* of India" leaves me in doubt as to whether he compared it with a series of *C. trimaculatus* at all.

While fully recognizing the good work of American ornithologists, I think it is a matter for regret that many "new" forms of African birds have lately been described by them, based on one or two specimens only, and without comparison with the material in the museums of Europe. The result is that some recent descriptions are more of an addition to synonymy than to scientific knowledge.

Passer domesticus chephreni appears to be identical with *Passer domesticus niloticus* Nicoll & Bonhote, with which, and not with *P. d. indicus* Hart., Nicoll and Bonhote now unite the Giza Sparrow.

I am, Sir,
Yours &c.,
A. L. Butler.

Khartoum,
October 7, 1914.

The Final Extinction of the Passenger Pigeon.—From the October number of 'The Auk' we learn that the last living example of *Ectopistes migratorius* died on September 1 of last year in the Cincinnati Zoological Gardens. It was a female and had been in captivity for twenty-nine years. The Passenger Pigeon nested in large communities, and these were so raided by trappers that there can be little doubt that the bird has been exterminated by the direct agency of man.

Mr. Frank M. Chapman ('Birds of Eastern North America,' 1912, p. 282) gives the following account of the history of this bird :—"Wilson, writing about 1808, estimated that a flock of Wild Pigeons observed by him near Frankfurt, Kentucky, contained at least 2,230,272,000 individuals. . . . An article by William Brewster on "The Present Status of the Wild Pigeon as a bird of the United States with some notes on their habits" (Auk, vi. 1889, p. 285), gives much information concerning the recent history of the bird in Michigan, one of its last strongholds. According to an informant of Mr. Brewster's the last nesting in Michigan of any importance was in 1881. It was of only moderate size—perhaps eight miles long. The largest known Michigan nesting occurred in 1876 or 1877. It was twenty-eight miles long and averaged three or four miles wide.

"The Passenger Pigeon is now so nearly extinct that although it has been reported as 'seen' on various occasions, there appears to be no unquestionable record of its actual capture since 1898. Singularly enough, two specimens were taken on September 14 of that year, an immature bird at Detroit, Mich. (Fleming, Auk, 1903, p. 66) and an adult male at Canandaigua, N.Y. (Eaton, 'Birds of New York')."

'*Zoological Record' for* 1913.—The portion of the 'Zoological Record' for 1913 containing the "Aves" was issued last month and should be in the hands of every working ornithologist. It can be obtained apart from the rest of the volume for 6*s.* from the publishers, Messrs. Harrison & Sons, of 45 St. Martin's Lane.

The present issue contains a list of 1576 titles dealing with various aspects of ornithology, as compared with 1665 for the year before; of these 370 are British, 368 come from the United States, 309 from Germany, and 130 from France. The other countries which run into double figures are Russia 82, Italy and Australia 52 each, Austria 46, India 32, Holland 27, Finland 25, and the South African Union 16.

It is to be hoped that the war will not prevent the issue of the volume for 1914, though it will doubtless be a matter of great difficulty to complete it. Not only has the war caused the cessation of the issue of a great many periodicals, but it will be impossible for the Central Bureau to receive the foreign titles from many of the contributing countries, even if the organizations and bureaus in these countries still continue their work. We understand, however, that an effort will be made to issue the volume for the present year and to make it as complete as possible, and in the meantime all ornithologists can assist in making the financial burden, which is undertaken by the Royal Society, less by subscribing for a copy of the work.

The New Edition of the B. O. U. List of British Birds.—This work is now complete and printed off except for the Index, and it is hoped that it will be ready for issue to subscribers early in February. The special subscription price to Members has been fixed at 5*s*. 6*d*., delivered free, and the Secretary will be glad to receive remittances as soon as possible. If Members would kindly enclose this amount when sending their annual subscriptions, it would be a convenience.

THE IBIS.

TENTH SERIES.

Vol. III. No. 2. APRIL 1915.

X.—*Notes on the Ornithology of the Matopo District, Southern Rhodesia.* By L. Beresford Mouritz, M.B.O.U., M.S.A.O.U.

The Matopo* District is situated to the south-east of Bulawayo and, roughly speaking, is bordered on the east by the Umzingwani River, and on the west by the Shashani River and the Bulilima-Mangwe District. To the south side lies Gwanda, whilst to the north the watershed of the Zambesi-Limpopo system forms the most convenient demarcation. The hills proper cover a tract of about 3000 square miles, and are of a biotite-granite formation, with microcline, as the dominating felspar, surrounded by schists, and with dolerite and other intrusions in places.

Almost unique in their topography, the Matopos are difficult to describe in a few words, but are frequently likened to a turbulent sea of hills. The surrounding veld is mostly covered with timber or bush, but there are also extensive open grasslands and subsidiary groups of kopjes; whilst on the north side particularly, the rounded rockless hills ("amaqaqa") are a feature of the landscape. The altitude of Mt. Silozi (one of the larger peaks) is roughly 4900 feet—the valley below being 4200—whilst other points reach over 5000 feet. It should be noted, however, that in the more elevated parts the hills seldom rise abruptly for more than 200 or 300 feet, whereas, where the general plane of the valleys is lower, one finds hills rising over 600 feet. The hotel at the terminus of the branch line from Bulawayo is 4375 feet above sea-level; and the World's View—hallowed to all eternity as the last resting-place of Cecil John Rhodes—is 4700 feet. A feature of many of the larger ranges is the crater-like valleys at their summits, and one often finds natives' stock grazing in such places, whilst duiker grow to a great size in these out of the way spots. Nearly every range has its quota of leopards, which prey upon the plentiful klipspringers, baboons and rock-rabbits, and at the same time they are great depredators of the inhabitants' small stock.

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* Variously spelt Matobo, Matoppo, and Madobo.

Ornithologically considered, the Matopos offer an ideal hunting-ground, and a few days' sojourn in these delightful hills and valleys must serve to convince one that the whole area is indeed one of Nature's preserves. The many precipitous krantzes* away in the remote ranges present secure breeding-sites for Ravens, Eagles and Hawks, where they will be able to nest for centuries in undisturbed possession; whilst favourable conditions are offered to the smaller birds in the overgrown ravines and rank growth along many of the streams. As is to be expected of such a peculiarly-formed and well-defined formation, certain species of birds are found which do not occur in the adjacent districts, except, in some cases, as daily visitors at stated seasons (when tempting food-supplies lure them from the hills), or merely as casual wanderers at odd times. Similarly, one finds species occurring plentifully on the surrounding veld which do not penetrate any distance into the hills, and which are unknown among the central ranges.

Before proceeding further, it would be as well to state that I have not collected in the eastern Matopos, nor have I had any experience of the southern side, where, however, the avifauna evidently merges with that of the Mangwe District, insomuch, as I am informed by natives, Vultures ("amanqi"), Sand-grouse ("isikwalakwala"), and Knorhaan ("umzwilizwili") occur in the adjoining mopani country. In 1908 I collected around Fortusher; in 1910 and 1911 brief visits were paid to the Rhodes' Dam and other localities; whilst I was resident on Lucydale farm from January to May, 1912, and then went for an ornithological trip in the hills and lived in a cave close to Mshingili until September; the whole of July and the first two weeks of August, however, I spent in hospital on account of a recurrence of blackwater fever, and this eventually forced me to leave the country.

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* *I. e.*, precipices.

The botanical features are varied, and, in addition to the appended list of the commoner trees, include species of *Olax*, *Turræa*, *Sphedamnocarpus*, *Antidesma*, *Phyllanthus*, *Maprounea*, *Heeria*, *Lannea*, *Falcourtia*, *Cussonia*, *Vitex*, as well as various others, whose botanical position has yet to be determined, *e. g.*:—the "amapapapa," "amakandalisilwana," "izikukuku," "amakolajana," "izilwzi," "amakololonkonyani," "isitolwana," and "izitshokesana," of the Matabele.

The commoner trees and shrubs include the following:—

mcena	*Aloe excelsa.*
umkiwa (umkiwana)	*Ficus* sp.
isiqwalapa	*Protea* sp.
ilipani	*Copaifera mopani.*
umkamba	*Afzelia cuanzensis.*
umpaca	*Bolusanthus speciosus.*
umqoqoqo	*Erythrina tomentosa.*
umnondo	*Burkea africana.*
umvimela	*Kirkia acuminata.*
umhlafuto	*Ricinus communis.*
umhlonhlo	*Euphorbia abyssinica.*
umganu	*Sclerocarya caffra.*
umpafa	*Zizyphus mucronata.*
uxaguxagu (mtokwe, mtohwi)	*Thespesia garekeana.*
umqogolo	*Doryalis caffra.*
umangwe	*Terminalia sericea.*
umdhlauzo	*Diospyrus mashuma.*
umnquma	*Olea* sp.

umkomatsana ("umhlati")	*Strychnos* sp.
umlugulu	*Carissa tomentosa.*
umvibi	*Kigelia* sp.
umvalasangwana	*Gardenia* sp.
umvilo	*Vangueria* sp.
umpahla	*Brachylæna rhodesiana.*

The native population consists of Matabele ("amandabele") and Makalanga ("amaholi"), and where known, I have inserted the native names with the abbreviation "Sind." for the Sindabele language. It should be noted that in Sindabele, which is a dialect of Zulu, the letters "c," "q" and "x" are expressed by clicking sounds made by the tongue being pressed against and withdrawn sharply from the front teeth, roof of mouth, and back teeth respectively; "hl" is practically similar in sound to the Welsh "ll." The emphasis is almost invariably on the penultimate syllable.

Throughout the following paper I have adopted Dr. Reichenow's classification as laid down by Gunning & Haagner in their "Check-List of South African Birds" (Annals Transvaal Museum, vol. xi. 1910), but where this is at variance with Sclater's List*, I have added the necessary supplementary nomenclature.

A diesis (‡) placed before the specific name denotes that the species has been recorded by myself as occurring in the adjoining Mangwe District (Proc. Rhod. Scient. Assoc. vol. x. 1910, pp. 46–84), or that there is a specimen from that district in the Rhodesia Museum, Bulawayo.

1. ‡ **Colymbus capensis.** Cape Dabchick.

Podicipes capensis (Licht.); Scl. iv. p. 513.

An occasional visitor to the Dam and the Umzingwani River, and also sometimes to be seen on the Malemi and other streams.

2. **Phalacrocorax africanus.** Reed Cormorant.

This Cormorant must be very rare as I have only one record—and that of a solitary individual seen in August sitting upright on a rock in a quiet reach of the Malemi

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* Stark and Sclater, Fauna of South Africa, Birds, vols. i–iv. 1900–1906.

River. It was sunning itself, with wings partially extended, after diving.

3. ‡ **Nyroca capensis.** South African Pochard.

Nyroca erythrophthalma (Wied); Scl. iv. p. 147.

Sind. "idada," also applied to other species of the family.

The Pochard occurs on the Rhodes' Dam at odd times in varying numbers. Of late years, owing to dry seasons and the consequent ever-decreasing water area, none of the ducks have appeared in full force on the Dam. I have heard of its occurrence on the Umzingwani River, but have not noticed it there myself.

4. **Anas undulata.** Yellow-billed Duck.

This is our rarest duck, I think, and it only occasionally puts in an appearance at the Dam.

5. **Anas sparsa.** Black Duck.

The only resident duck occurring in the district, and although visiting the Dam upon occasion, it is never found there in large numbers like the Pochard and Teal. In 1908, a pair nested on the Malemi River in June, whilst I continually noticed another pair on the same river (but well within the hills) in June 1912, and I have no doubt that they also had a nest concealed amid the rushes somewhere. Other localities where I have suspected them of nesting, are the Ovi River and a spruit on Lucydale. When not breeding, the Black Duck moves about a good deal, and is usually to be found in all suitable places, although, on account of it being a nocturnal feeder, and owing to the facility with which it skulks off to concealment, its presence may readily be overlooked.

6. ‡ **Anas erythrorhyncha.** Red-billed Teal.

Pœcilonetta erythrorhyncha Gm.; Scl. iv. p. 141.

The majority of the ducks which visit the Dam and minor sheets of water on migration are referable to this species.

7. ‡ **Sarkidiornis melanotus.** Knob-billed Duck.

The Muscovy, as it is generally called, visits us in some numbers, and solitary immature birds occasionally stay for months in certain favoured localities, but owing to their nocturnal feeding habits readily elude observation. This duck is strong on the wing, and when in flocks flies in a **V**-shaped formation. As is well known, the Muscovy frequently perches in trees.

8. ‡ **Cursorius temmincki.** Lesser Courser.

The Lesser or Temminck's Courser occurs to my knowledge from February to May inclusive, but will probably prove to be at least partially resident in the open country. It prefers bare stony patches of ground, but also frequents the sites of old kraals and gardens. This species is, in this district, usually met with in small parties of from three to six.

9. ‡ **Stephanibyx coronatus.** Crowned Lapwing.

Sind. "intenjana."

Rare, and I cannot but think somewhat of a straggler to the district. A pair occurred at Fortusher in July 1908, whilst in March and April 1912 I met with this Plover several times in a mopani-belt close to Mtaba mnyama, and later heard them calling at night within the hills.

10. ‡ **Lobivanellus lateralis.** Large Wattled Plover.

Occurs on migration in varying numbers and usually puts in an appearance during the first week in April. These Plovers are especially noisy on moonlight nights, and throughout their short stay with us frequent the larger pools and mud-holes. They are more often seen in the open country than within the hills.

11. ‡ **Œdicnemus capensis.** Cape Thicknee.

Sind. "inzwanezwane" or "ivanevane."

The only place where I have noted the Dikkop is on the open veld between Figtree and the hills, and even here they seem to hug the watershed. Owing to their nocturnal feeding habits and close assimilation to their surroundings, they frequently escape observation.

12. ‡ **Totanus glareola.** Wood Sandpiper.

♂, January 25, 1912. 4375 ft. Iris dark brown; bill dusky; legs yellowish-olive.

This Sandpiper may occur regularly at the Dam, but I am inclined to think it is somewhat rare.

13. ‡ **Tringoides hypoleucus.** Common Sandpiper.

A regular visitant on its migrations to the Rhodes' Dam, and also frequently occurring elsewhere throughout the district—especially on the Malemi and Ovi Rivers. It is usually present early in March, and departs for its northern breeding-grounds about the 1st of April.

14. ‡ **Otis kori.** Kori Bustard.

Sind. "litjeme," "itjeme" or "umtinsi."

The Paauw is not uncommon, and sometimes resident throughout the year in the open country surrounding the hills. There is, however, an augmentation of their numbers towards the end of the rainy season. During the summer these Bustards seem to prefer the higher elevations and "amaqaqa" country, but towards the middle of May they move down to the lower lands and are often then to be found frequenting the cornfields.

15. ‡ **Otis ruficrista.** Red-crested Bustard.

Sind. "umzwilizwili" or "umswaliswali."

This species, erroneously named *O. melanogaster* in my Mangwe notes, is very rare here, but in May 1908 I saw a solitary one close to the Usher-Bulawayo road.

16. **Gallinula angulata.** Lesser Moorhen.

A rarity. On February 4, 1912, I saw one feeding close to the small stream at Lucydale early in the morning; but it was very shy, and almost immediately skulked off into some rushes.

17. **Fulica cristata.** Red-knobbed Coot.

On April 2, 1911, a solitary one occurred on Lonsdale farm.

18. ‡ **Turnix lepurana.** Kurrichane Button-Quail.

Sind. "ingoqwa" or "umgoqo."

Whilst at Fortusher I found this little bird far from uncommon; later, however, it seemed to be somewhat less numerous, but I think it is partly migratory and that its numbers depend to some extent upon the rainfall. Locally known as the "Sand-Quail."

19. **Platalea alba.** African Spoonbill.

The Spoonbill must be very rare here, and I have not seen it elsewhere in Matabeleland. On January 30, 1912, I had a close view of one flying in company with a White Stork and going practically due north—both birds, judging by their direction, had come straight from the Dam.

20. ‡ **Abdimia abdimi.** White-bellied Stork.

A very common summer visitor, occurring in varying sized flocks.

This Stork may frequently be seen feeding along with the next species, but this is only a temporary arrangement, the flocks usually separating towards roosting time. However, occasionally I have noticed an outcast here and there, evidently forced to throw in its lot with the White Storks for the sake of companionship. The White-bellied Storks, which spend the northern winter with us, leave rather early in the year, but their place is taken by others which are evidently travelling up from the south by short stages. The following extract from my 1912 diary bears upon this:—

February 25.—By far the greater number of these Storks left last night—they have been consorting in larger flocks than usual during the past few days.
" 26 to March 5. } Only a straggler here and there.
March 6.—A large flock, flying high, going N.E. at sunset.
" 7-9.—None.
" 10.—A lot on the Rhodes Estate.
" 11.—Flock of about a score passed over Lucydale, flying high and due north.
" 12-16.—None noticed.
" 17.—Flocks on the Rhodes Estate.
" 18-20.—None.
" 21.—Several individuals and also a pair.
" 22 to May 2. } None.
May 3.—Two! It is perhaps interesting to note that a north wind has been blowing for the last 36 hours—this is probably the cause of the appearance of these belated travellers.

Early one morning, hearing a great hubbub down at the river, I was rewarded with the fine sight of a pair of Martial Eagles out hunting over the open country, much to the consternation of these Storks, which all mounted up into the air, gradually going higher and higher as they successfully baffled the Eagles' swoops by sharp twists and turns and other aerial evolutions. After the Eagles' departure all the Storks in the neighbourhood—about 150—congregated together, moping, on an open piece of ground, evidently in readiness for any possible resumption of hostilities by the Eagles, whose peculiar ringing, screaming cries could be plainly heard, even from the immense height to which they had retreated.

21. ‡ **Ciconia ciconia.** White Stork.

Ciconia alba (Linn.); Scl. iv. p. 37.

Sind. "lingabuzane": sometimes "lingabuzane mhlope."

A summer visitor, and perhaps even more numerous than the last named. Although in 1912 some of these Storks evidently migrated on the night of February 24, they are, as a rule, later in their departure, and I have even noticed them as late as the 24th of May!

Further south, however, this Stork often remains through the winter months (Journ. S. Afr. O. U. vol. viii. 1912, p. 80). Several birds which I shot, in the faint hope of obtaining a ringed bird, were simply infested with ticks round the upper neck and head, and it would seem that this Stork (as well as many other birds) is a regular agent in the distribution of these pests. I have more than once noticed flocks flying higher and higher on the approach of heavy rain-storms, presumably with the object of mounting up above them and keeping dry. On the 1st of April I watched one of these birds evade a pair of Wahlberg's Eagles again and again over the Dam, the while keeping up a continuous clapping of its beak, which seemed to intimidate the Eagles.

22. **Ciconia nigra.** Black Stork.

A solitary one occurred at the Dam on September 6, 1908.

23. ‡ **Scopus umbretta.** Hammerhead.

Sind. "itegwani."

Uncommon in the Matopos compared to other districts in Southern Rhodesia, but it is to be seen here and there throughout, wherever there are suitable localities. The old nests of these birds are sometimes utilized by Barn-Owls. A nest on Lucydale, upon being examined, yielded a "dagwala"—one of the divining bones ("amatambo") of the Matabele!

24. **Ardetta payesi.** Red-necked Little Bittern.

I obtained an immature specimen on the 18th of January at the spruit on Lucydale.

25. **Ardea purpurea.** Purple Heron.

♂. February 1, 1912. Rhodes Estate, 4350 ft.

This bird was very wild, and it was some time before I could get within gunshot. The stomach contained the remains of frogs and also a large grasshopper.

26. **Ardea cinerea.** Grey Heron.

There is usually a pair to be seen on the Dam, and I have no doubt they wander occasionally, as my notes include occurrences on Lonsdale and Lucydale farms.

27. **Herodias alba.** Large White Egret.

Individuals were noticed at the Dam in September 1908, April 1911, and January 1912.

28. ‡**Vinago delalandei.** Cape Fruit-Pigeon.

Only occurring in the hills, where it is not uncommon; indeed, whilst at Fortusher in 1908, I found it rather numerous, frequenting the fig-trees ("imkiwana") in parties of seven and eight. At other times they may be found amid the larger trees high up the sides of the range, but they are hard to shoot in such surroundings, being exceedingly quick on the wing, and twisting and turning amongst the dense trees with the greatest rapidity and ease. The call of this pigeon is peculiar and hard to render in syllables.

29. **Columba phæonota.** Rock-Pigeon.

Sind. "ivugoto."

The Rock-Pigeon is very common and resident, but as a breeding species is confined to the hills; foraging parties, however, are constantly to be met with over the surrounding country, where, in company with the larger doves, they do considerable damage to the ripening "amabele." They are very fond of monkey-nuts, which they hunt for diligently even after the crop has been reaped. The heart of the male forms an essential constituent in a love-charm preparation, formerly and probably still in use by the natives. I found nests in March, but imagine that the nesting season is somewhat prolonged.

30. ‡ **Turtur senegalensis.** Laughing Dove.

Sind. "ijuba."

Common at Fortusher, but on the whole less numerous than *T. capicola*.

31. **Turtur semitorquatus.** Red-eyed Dove.

Sind. "ivuvuto."

The Red-eyed Dove appears to be a resident, but is very uncommon. I have noticed it close to the Terminus Hotel, also on Makalanyoni and other ranges within the hills, where it loves to frequent thickly-wooded ravines. An example which I shot on May 28 appeared to be intermediate between this and *T. ambiguus*, having the underparts as in Bocage's species, whilst the forehead and crown were very dark grey. Irides orange; bare skin round the eyes red; bill black; feet purplish. ♂: alt. 4700 ft.

32. ‡ **Turtur capicola damarensis.** Damara Turtle-Dove.

Sind. "icelegwane."

There seems but little doubt that the majority of our Turtle-Doves are referable to this species: and yet on account of numerous individuals being darker than the Damaraland birds (and evidently more or less approaching *T. capicola tropicus* Rchw.), one has difficulty in recognizing the validity of these subspecies of the typical Cape bird;

especially as I have noticed our two local forms interbreeding on more than one occasion. Whereas in other districts of Southern Rhodesia I have found this dove nesting throughout the year, I have not found fresh eggs later than the middle of May in the Matopos.

33. ‡ **Chalcopelia afra.** Metallic-spotted Dove.

Sind. "lisenbe."

All of these doves which I have seen here, have had the metallic spots green, or merely edged with blue. This species prefers the hills to the open country, and is, indeed, but seldom found at any distance from the granite in this district.

34. ‡ **Œna capensis.** Namaqua Dove.

Sind. "unkombazana" or "injovazana."

Although very common at Fortusher in 1908, subsequent observations tend to prove this species less numerous than might be expected, and somewhat locally distributed.

35. ‡ **Numida coronata.** Crowned Guinea-fowl.

Sind. "itendele."

The Guinea-fowl, once so common in the hills, is now greatly reduced in numbers, and indeed is no longer found in many of its old haunts. This diminution may probably have been caused through the ravages of wireworm or other disease, but, to my mind, there seems little doubt that the town and local sportsmen, aided by the greatly increased numbers of baboons (with their egg-stealing proclivities), are the true causes of this bird's partial extermination. This, as anyone who is conversant with the habits of the Guinea-fowl will understand, should be deplored the more on account of the high economic value of the bird. Within the hills, "amatendele" are still to be found along the Malemi valley, and I have frequently met with them on the Mshingili and Malamba ranges, but always in sadly diminished numbers. On the surrounding veld they are still more uncommon to the east and north, but are more plentiful to the south and west, and are, at the present day, perhaps most numerous on the southern slopes of the hills.

It is interesting to note that there are "Bushmen" paintings of Guinea-fowl on Silozwana and other kopjes.

36. ‡ **Pternistes swainsoni.** Swainson's Francolin.

Sind. "isikwehle."

Common throughout. These "Pheasants" do considerable damage to the young mealie and monkey-nut crops, and are usually to be found in their vicinity, except during dry spells of weather, when they gather round the kopjes. After having been persecuted in these situations, they become very wild, and go off strong and high, giving most sporting shots. Within the central ranges, away from cultivation, these birds resort to the reed-fringed pools and streams in the morning and evening, whilst during the heat of the day they retire to the kopje-sides. The vitality of "zikwehle" is extraordinary and almost incredible. On one occasion I recovered a bird which had been disembowelled by a ·303 bullet two days previously, still alive, skulking in some rushes! The legs and feet are black with a reddish tinge, but on February 19, 1912, I shot an old female with red legs and the scales on the tarsus delineated with grey, as in *P. humboldti.*

37. **Francolinus sp.**

This is an uncommon species and only found well within the hills. It is very shy, usually keeping up towards the tops of the ranges, and I have been unable to obtain specimens. It is apparently *F. afer* (*F. africanus* of Sclater's list), or a closely allied species.

38. ‡ **Francolinus shelleyi.** Shelley's Francolin.

Sind. "inkwali," also applied to *F. sephæna* in the Mangwe District.

The Redwing is uncommon, and I only met with it at Bedza and within the hills—principally on the Mshingili and Malamba ranges.

39. ‡ **Francolinus coqui.** Coqui Francolin.

Sind. "newempe" or "iswempe."

Another rather uncommon species, but I have seen it in Matondo's Valley, and also beyond the hills in the "amaqaqa" country.

40. ‡ **Coturnix delagorguei.** Harlequin Quail.

Sind. "isakwaca."

The Harlequin Quail is a common summer visitor, but its numbers are dependent greatly upon the rainfall, and consequent food supplies. April 2 is the latest date I have seen them: but in 1912, owing to dry spells, the majority departed about the middle of February. I am almost sure the Cape Quail (*Coturnix capensis*) also occurs but I have not procured a specimen.

41. ‡ **Serpentarius serpentarius.** Secretary-Bird.

Serpentarius secretarius (Sparrm.); Scl. iii. p. 402.

Sind. "udwai."

The Secretary-Bird is of course not found within the hills, but it is not uncommon on the surrounding veld, albeit showing a preference for the "amaqaqa" country. Occasionally, these birds soar to a great height until they become mere specks to the vision. Although hardly appealing to the average man's palate, this bird is by no means bad eating, a fact already noted by Sowerby. I have been unable to obtain any information as to the botanical name for the tree "umlaladwai," and have come to the conclusion that this term is simply applied by the natives to any tree to which a Secretary-Bird resorts for purposes of nidification.

42. **Polyboroides typicus.** Harrier-Hawk.

On April 21, 1912, I disturbed an adult (a female, by its size) from the upper branch of a bare tree on the side of a kopje. It was very sluggish, and although flushed several times it never flew far, but perched on a tree or "dwala" within twenty or thirty yards. I noticed that when leaving a perch this Harrier Hawk kept its legs hanging down somewhat, but, after a few beats of its wings, the legs are stretched out under the tail—this bears out Dr. Stark's observations.

43. **Circus pygargus.** Montagu's Harrier.

Circus cineraceus (Mont.); Scl. iii. p. 368.

Specimens were obtained on December 4, 1910, on the Rhodes Estate, and on March 27, 1912, on Vriegevicht farm. I believe this Harrier in not uncommon.

44. ‡ **Circus macrourus.** Pallid Harrier.

A common summer visitor, departing early in March. The majority are in the various stages of spotted phases of plumage, common to the female and young, but quite a few of the grey and white adult males occur. These Harriers frequently follow the plough and devour greedily any large grubs turned up, but they will not touch moles; they are indefatigable hunters, and I have frequently seen them continue quartering the ground long after sunset. The soft parts of an adult male are:—Irides yellow; bill dark brownish horn; cere and feet yellow. Stomachs examined, of both this and the last species, have contained remains of mice large grasshoppers, and beetles.

45. ‡ **Circus ranivorus.** South African Harrier.

Like its congeners, this species is to be found only on the open country surrounding the hills, and is, as a rule, usually not found far from water. It is a rarer bird than either of the last named, and personally I have only seen it on two occasions—April 1, 1911, and January 16, 1912—at the Dam. The soft parts of a female found dead on a latter occasion were:—Irides tawny-yellow; bill blackish; cere dirty yellow; and feet yellow with black claws.

46. ‡ **Melierax mechowi.** Mechow's Goshawk.

A rare species which I have only obtained close to Figtree Camp in October 1910. This Goshawk probably prefers the thicker timbered tracks within the hills to the open country.

47. ‡ **Kaupifalco monogrammicus.** African Buzzard-Eagle.

Asturinula monogrammica (Temm.); Scl. iii. p. 327.

On August 17, 1912, I shot an example, but was unable to determine the sex. This bird was found in very thick scrub on the Malamba range in the Malemi valley, and it allowed me to approach within a few yards of the tree in which it was evidently dozing. From the débris of this Eagle's stomach, torn to pieces by a ·303 dum-dum, I was only able to gather a portion of a very dark greenish-black scorpion (very numerous in the Matopos), but this bears out Marshall's observations on the diet of this Buzzard-Eagle in Mashonaland.

48. ‡ **Astur polyzonoides.** Little Banded Goshawk.

This little Goshawk is not uncommon, and, like so many of the Accipitres, is most numerous within the hills.

49. ‡ **Accipiter minullus.** Little Sparrow-Hawk.

I only met with the Little Sparrow-Hawk on two occasions, in June and August, 1912, and not having procured specimens I cannot say whether they are referable to the subspecies *A. m. tropicalis* Rchw. or not, but all those I have seen in Southern Rhodesia have appeared to belong to the pale form. Once I saw an individual chasing dead leaves aroused by the whirlwind!

50. ‡ **Micronisus gabar.** Gabar Goshawk.

Melierax gabar (Daud.); Scl. iii. p. 364.

A rather rare bird, but occurring both within and without the hills. It is evidently a resident, as I have seen it in January, May, and June.

51. ‡ **Micronisus niger.** Black Goshawk.

Melierax niger (Vieill.); Scl. iii. p. 366.

Several specimens of the Black Gabar have come under my notice. A female shot on Lucydale farm on February 11, 1912, measured 407 mm. in the flesh; whilst the wings and tail were 203 mm. and 180 mm. respectively. Iris orange-yellow; bill black; cere blackish; legs black and dull yellow (the latter colour principally confined to the sides of the tarsi); feet black above, and yellow and dirty orange below. Another one, observed on March 27, had very similarly coloured legs. Sclater gives the soft parts as: iris red; bill black; base, cere, and feet cinnamon-red; whilst the length is given as 12·25 inches! Both these birds were very tame and were evidently after our chickens, but examples seen later in the hills were much wilder. It is perhaps interesting to add that a third example, collected by Mr. de Laessoe in the Bembesi district, and examined by me in the Rhodesia Museum, also has the legs and feet black and yellow.

52. ‡ **Spizaëtus bellicosus.** Martial Hawk-Eagle.
Eutolmaëtus bellicosus (Daud.); Scl. iii. p. 301.
Not uncommon.

53. **Hieraaëtus spilogaster.** African Hawk-Eagle.
Eutolmaëtus spilogaster (Bp.); Scl. iii. p. 299.

This Hawk-Eagle is quite common within the hills, where it is most frequently seen sitting on the top of some huge boulder well up a kopje-side. In such situations its almost immaculately pure white underparts, contrasting with the sombre granite, make it very conspicuous. At dawn in the nesting-season I have frequently noticed pairs flying strongly and steadily together just over the tree-tops, and, I think, probably bound on some hunting expedition; at other times they may be seen circling round and soaring high in the heavens.

This Hawk-Eagle frequently attends sportsmen. I remember once hearing guinea-fowl calling close to camp early in the morning; I went out after them, and on my approach, I noticed one of these Eagles perched at the top of a large bare tree about 150 yards distant, and evidently very much alive to the situation, as the guineafowls' alarm-notes testified. The "pot" being empty I took no chances, and as the "matendele" rose up into a tree together, I gave them both barrels and hit four. Proceeding to pick them up I found two dead, and, after despatching the third, I looked round for the remaining one, but for some moments without result. Eventually I found the decapitated head and a blood spoor leading off towards a thick clump of bushes. What had happened was simply this: the Eagle had watched me fire, and, while I was securing the other wounded one, had swooped down on its hapless victim, completely severed its head, and then hopped off with it round to the other side of the bushes (30 yards away), and when I came upon the scene was busily devouring it. The Eagle rose within a few feet of me, but I had of course re-loaded, and it fell almost immediately to my right barrel. Upon examination it proved to be an adult male. Length 25·00, wing 17·00, and tail 11·5 inches. Iris yellow; bill blackish-horn, but the lower mandible yellowish at base; cere Naples yellow; feet yellow with blackish claws.

On another occasion when out shooting "izikwehle," one of these bold birds dashed fearlessly across my front and carried away, almost "in its stride," an old cock pheasant, which could only just manage to fly, weighted down with lead as it was. Generally speaking, however, this Eagle is extremely shy and difficult to approach, and is but rarely seen around the habitations of man—although in many cases, it is probably the culprit which people should blame for the ravages in their fowl-yards.

I found a nest on August 24 on the side of Mshingili, placed about 25 feet from the ground in an "umkamba." It was substantially built of sticks, and had a cushion of leaves, which had been plucked when green, for the egg to rest on. The single egg, somewhat incubated, was dirty white with several small blotches of very pale brick-red round the greatest diameter, and measured about 2·50 × 2·00. I think it highly probable, from what I have seen of this bird's habits in the Matopos, that it will eventually be found nesting on the krantzes.

54. **Hieraaëtus pennatus.** Booted Eagle.

Eutolmaëtus pennatus (Gm.); Scl. iii. p. 298.

On June 21, 1912, I shot a female which was perched on the topmost boulder of a low kopje, and which I had mistaken for *H. spilogaster.*

55. **Hieraaëtus wahlbergi.** Brown Eagle.

Aquila wahlbergi Sund.; Scl. iii. p. 296.

Sind. "ukozi," also applied to other eagles and hawks.

Somewhat uncommon, but I have met with it at the Dam and close to Bedza, where I saw one which was beating, Harrier-like, up a dry watercourse at sunset. It is also sometimes to be found within the hills.

56. **Aquila verreauxi.** Black Eagle.

The Black Eagle has not been previously recorded from Southern Rhodesia, but it is not particularly rare in the Matopos. It is, however, decidedly local, and not, as a rule, prone to wander far beyond the precincts of the hills. On one occasion I saw an individual over cultivated lands on the Rhodes Estate, but otherwise I have only met with it away in the more remote ranges. Mshingili and Malamba are favourite haunts, and in June 1912 I located an eyrie (albeit inaccessible) on the former range, and there I used to watch these magnificent birds for hours. Natives inform me that rock-rabbits and klipspringers are the favourite prey of this Eagle; but, personally, I have never seen them take buck to the nest, but always conies. I have seen them catch rock-rabbits on "dwalas"; and once saw the male Eagle leave its mate in the air, swoop down, swerve round a huge rock, and positively dash into a wretched coney, which was contentedly chewing bark in the uppermost branches of an "umvimela" tree—the leaves of which are the rock-rabbits' favourite food. The whole drama was so sudden that one could hardly grasp what had happened before the Eagle was returning to its mate. At a little distance these Eagles appear to have white beaks in certain lights, but the soft parts are really: iris tawny; bill bluish-horn; cere and bare skin round the eyes light yellow; feet yellow.

On August 23, I noticed the single young one on the wing with its parents for the first time. Previous to this, one or the other of the parents usually soared round at a great height over the eyrie-site, or would remain for hours perched at the very summit of the highest peak of the range; but later the two birds and their youngster were nearly always together, and seemed to frequent the lower slopes and valleys at this time. When I left in September they were still all together.

57. ‡ **Aquila rapax**. Tawny Eagle.

A somewhat rare bird, but I have notes of its occurrence at Mtaba mnyama early in the year, and also later well within the hills. An adult male shot on March 4, whilst perched on a rock at the top of a kopje, measured 27·75 inches, and had the irides bright yellow, bill blackish with gape and cere yellow, legs bright yellow with blackish claws. The stomach contained remains of a rock-rabbit. The piercing cry of this Eagle is usually uttered whilst soaring.

58. **Buteo jakal.** Jackal Buzzard.

Not uncommon within the hills, and I noticed a pair breeding on the Incngwe range in August. I have found this Buzzard rather sluggish, and have passed along a path within a few yards of one stolidly sitting on a boulder.

59. **Buteo augur.** Augur Buzzard.

On January 23 I shot an Augur Buzzard in adult plumage, and which I think by its size (21·50 in.) was a female. Alt. 4400 feet. Iris yellow; bill blackish, darker towards the tip; cere yellow; feet yellow with blackish claws. This bird was sitting on its tarsi by the side of a temporary reserve of water, in the concave top of a huge boulder halfway up a kopje.

60. **Buteo desertorum.** Steppe Buzzard.

The Steppe Buzzard appears to be a fairly numerous summer visitor. Although occasionally seen round kopjes I more often observed it, always singly, perched on some point of vantage in the open country, which is here sparsely dotted with acacia. Usually somewhat sluggish, I have nevertheless always had a lot of trouble to get within gunshot, but when disturbed they almost invariably perch again within sight. March 6 is the latest date on which I have seen this migrant.

61. ‡ **Helotarsus ecaudatus.** Bateleur Eagle.
Sind. "inqonqolu."

Noticed very commonly at Fortusher in 1908, and later also in outside localities, but subsequent observations have shown it not so numerous within the Matopos as one might at first be naturally led to expect. I have never seen this Eagle attack snakes, but a native told me that he had seen a Bateleur rising from the side of a kopje with "a devourer of conies" (probably *Naia haie* Linn., African Cobra) in its talons. My own observations, however, tend to prove that this species is more of a carrion-feeder than anything else, except perhaps during the nesting season, although at times it is true that, like so many of our birds, this Eagle feeds voraciously on locusts. Bateleurs court in April and May, and are busy with the cares of nidification from then until August or September. On the 12th of August, 1908, I found a nest built into the fork of a large "mpapapa" tree overhanging a precipitous wall of granite. Whilst climbing up to get a view of this nest, I noticed a marauding Ringhals (*Corvultur albicollis*) harassing the male Eagle, and no sooner had the female, which was in immature plumage, flown off, than down swept the Raven and succeeded in rending to pieces the newly-hatched nestling before I could attain a suitable position to shoot from ; only, however, to be knocked off the nest—a mangle of mass and blood and feathers—by a bullet from my Lee-Enfield, the only weapon I happened to have with me, and in its turn possibly to become food for the Bateleurs which it had plundered.

The fully adult plumage in the female, distinguishable from the male by the broad black edging to the secondaries, does not seem to be attained until the fourth year. The third year's plumage I believe to be very little different, however, from the fourth's, albeit still considerably speckled with brownish feathers ; whilst the second year's is practically similar to that of the first year's, with cere and feet bluish, and perhaps lacking the light emarginations to many of the feathers of the mantle and underparts. I also believe that the female is not infrequently to be found breeding in immature plumage.

62. ‡ **Haliaëtus vocifer.** Sea-Eagle.

Sind. "inkwazi."

The Sea-Eagle is rare, but I have notes of its occurrence in April and June. On the latter occasion I saw a pair perched on top of a kopje, well away from water, but in spite of the time of the year, I have little doubt that it is not a breeding species with us.

63. ‡ **Milvus ægyptius.** Yellow-billed Kite.

Sind. "umzwazwa."

Although a common enough summer visitor to other districts of Southern Rhodesia, I have very few notes of this Kite's appearance in the Matopos, and in 1912 I did not see it later than February 5.

64. **Elanus cæruleus.** Black-shouldered Kite.

A rarity. I observed one close to the Dam on January 16, 1912.

65. ‡ **Falco minor.** South-African Peregrine Falcon.

Another rare species. However, I shot a male on the 25th of June, 1908, in the hills close to Fortusher.

66. ‡ **Falco biarmicus.** South-African Lanner.

Uncommon, but I have seen it a good many times within the hills. On one occasion I saw a Lanner repeatedly swoop without success at a party of spreeuws (*Amydrus*).

67. ‡ **Falco subbuteo.** Hobby.

A solitary Hobby put in an appearance at Lucydale on the 1st of February, 1912.

68. **Cerchneis rupicoloides.** Large African Kestrel.

Tinnunculus rupicoloides (Smith); Scl. iii. p. 276.

This Kestrel is rather rare and confined to the open country, where I have seen it on Westacre and Vriegevicht farms.

69. ‡ **Cerchneis rupicola.** South African Kestrel.

Tinnunculus rupicolus (Daud.); Scl. iii. p. 276.

Common and resident throughout, and especially numerous within the hills. I have found it breeding in January and February, and have noticed that when the young are hatched these Kestrels become very pugnacious. I have personally seen them sally forth to drive away Ravens, Storks, and even a Bateleur, which had dared to encroach upon their self-appointed preserves! On one occasion I saw a male pass a mouse to its mate on the wing, evidently so that he could continue hunting whilst she fed the young. I have frequently noticed this Kestrel abroad after nightfall.

70. ‡ **Bubo lacteus.** Giant Eagle-Owl.

Sind. " isikova," applied to all the larger species of Owls.

Not uncommon within the hills, where its loud sepulchral hoot is frequently heard at night. On the surrounding veld, however, it is far rarer, and I have only noticed it on Mataba mpisi. Pellets examined have contained remains of guineafowl and pigeon (probably *Columba phæonota*). The hoot of this fine Owl has been mistaken for the bark of a baboon, but to my ear it more resembles the "coughing" of a leopard.

71. ‡ **Bubo maculosus.** Spotted Eagle-Owl.

Common and resident throughout. The Spotted Eagle-Owl seems to prefer rocks to trees in this district, and I have almost invariably found them in caves or flushed them from amid rocks and boulders on the kopje-sides. Castings examined have contained remains of small birds, mice, and, in one case, the mutilated prothorax and elytra of a large beetle.

72. **Asio nisuella.** Marsh-Owl.

Asio capensis (Smith) ; Scl. iii. p. 241.

I have so far only found the Marsh-Owl in the open country, although it is extremely likely to be eventually recorded from some of the streams within the hills. On Lucydale farm I first noticed it on the 26th of January, 1912, and from then until the 1st of April it was usually to be found somewhere in the locality. This Owl is evidently a migrant with us, as the country is far too dry and scorched up in the winter to suit its habits, and during its stay it frequents the long grass and swampy situations close to streams.

73. **Asio leucotis erlangeri.** White-faced Owl.

Asio leucotis (Temm.); Scl. iii. p. 243.

I obtained a single example on March 30, 1912, as it was dozing in the upper branches of a wild plum-tree, situated in rather thick bush.

74. ‡ **Pisorhina capensis.** Cape Scops Owl.

I have not seen this little Owl personally, but Mr. Kay Robinson informs me that it is far from uncommon around the Figtree Police Camp; and as it also occurs in the Mangwe district to the south-east, it is highly probable that it will be found inhabiting the whole of the Matopo area.

75. **Glaucidium capense.** Barred Owlet.

On May 15, 1912, I had an excellent view of one early in the morning in a thickly wooded kloof; when disturbed, it flew off with the dipping flight common to both this species and *G. perlatum*, and uttering a peculiar whistle. Later, I believe I saw this Owl in some ranges south of the World's View, but I then found it very wary and difficult to approach.

76. ‡ **Glaucidium perlatum.** Pearl-spotted Owlet.

Sind. "mundugulu."

Seen but on a very few occasions, and I am almost inclined to believe that it is a rarer species than the last-named in this district. I never heard its peculiar whistle, which, elsewhere, has given it the name of the Brain-fever or Octave bird.

77. ‡ **Strix flammea maculata.** Cape Barn-Owl.

Strix flammea (Linn.); Scl. iii. p. 237.

Common, and inhabiting the caves as a rule. I have noticed that in flight this bird carries its feet held straight out under the tail.

78. ‡ **Poicephalus meyeri.** Meyer's Parrot.

Sind. “ isihweka ” or “ isiwkenka.”

These Parrots are not uncommon within the hills, but are less numerous on the surrounding veld, except perhaps on the Umzingwani, Umtjabezi, and Ovi rivers, where I have found them in some numbers.

79. ‡ **Chizærhis concolor.** Grey Lourie.

Schizorhis concolor (Smith) ; Scl. iii. p. 219.

Sind. “ umguwe.”

Common and resident throughout. I have found eggs in January and May ; on the latter occasion, the nest, more substantially built than usual, was placed ten feet from the ground in a “ umangwe,”—this being the first time I have found the “ Go-away bird ” nesting in other than a thorny tree. The eggs of two clutches gave a minimum length of 40 mm. and a maximum of 44·50 mm. ; the series being 42 × 32, 41 × 33·5, 40 × 33, 44 × 33, 43 × 34, and 44·5 × 35. The Grey Lourie, besides the various forms of its well-known call (whence its vernacular and native names), has also a hoarse guttural chatter (but seldom heard, however) which is very similar to that of the next species.

80. **Gallirex porphyreolophus.** Purple-crested Lourie.

Sind. “ ikurukuru.”

The Purple-crested Lourie, the most beautiful of all birds found in the Matopos, is not uncommon, but is practically confined to the more remote ranges. Even in its chosen haunts, however, it is not a conspicuous bird, in spite of its gay colours, and is but seldom seen, except, perhaps, as it sails across a valley to alight, with a hop and a run, upon some rock, whence it almost immediately disappears within the thick foliage of a neighbouring tree. At other times, such is its retiring nature, that even when one is warned of its proximity by the harsh call-note, it often succeeds in getting away unperceived. A favourite resort of this Lourie in the western Matopos is the Malamba Range, and it is upon such ranges which have their slopes more or less densely covered with trees and undergrowth, and not the ordinary kopje, that these gorgeous birds should be looked for. *G. porphyreolophus* differs from the Zambesi bird, *G. chlorochlamys,* in having the back and breast washed with pink.

81. ‡ **Centropus senegalensis.** Senegal Coucal.

Sind. "imfugu."

This is a resident species of Vlei Lourie, as these Coucals are locally called, which is not uncommon in the valleys away in the hills. It is a skulking bird, and, as a rule, frequents the thickest vegetation along the rivers and streams. Not having obtained specimens, I do not know for certain to which species the local form is referable, but as the Senegal Lourie occurs in the Bulawayo and Mangwe districts, it seems highly probable that the Matopo bird is the same.

82. ‡ **Clamator cafer.** Stripe-breasted Cuckoo.

Coccystes cafer (Licht.); Scl. iii. p. 198.

One noticed on March 3, 1912, amid large trees round the base of a kopje.

83. **Clamator jacobinus.** Black and White Cuckoo.

Coccystes jacobinus (Bodd.); Scl. iii. p. 195.

Although probably not an uncommon visitor during the rains, I have but one record, namely, of a single one seen in the hills on the 12th of February, 1912.

84. ‡ **Cuculus gularis.** South African Cuckoo.

In February 1912 I shot a young bird, just able to fly, and which was being assiduously fed by the foster-parent, *Erythropygia leucophrys.* The Cuckoo was perched on the top of a boulder at the base of a kopje.

85. ‡ **Chrysococcyx cupreus.** Golden Cuckoo.

Mr. S. Lundy informs me that he procured a specimen of the Golden Cuckoo on Vriegevicht farm early in February 1912, whilst I have also heard of its occurrence close to Bedza. At Bulawayo it is an uncommon visitor during the rains.

86. ‡ **Indicator indicator.** White-cheeked Honeyguide.
Indicator sparrmanni Scl. iii. p. 146.

Sind. "isehlo" or "insehlu," probably applied to *I. major* as well.

This Honeyguide is rather plentiful within the hills, but I found it very scarce on the surrounding veld. One of these birds came into our cave repeatedly to investigate the stock-pot of honey!

87. **Indicator major.** Yellow-throated Honeyguide.

On June 21, 1912, I saw a single one on the Malemi river at the foot of the Malamba Range. This species will, however, probably prove to be not uncommon.

88. ‡ **Lybius torquatus.** Black-collared Barbet.

These Barbets are numerous and resident throughout. I have observed them at their nesting-holes (twice in a Kaffir plum-tree) in February. These birds, or perhaps the male only, have a great variety of calls which include a very curious alarm-note, closely resembling the subdued "caw" of a rook! I have only heard this call at close quarters—as, for instance, whilst standing under the tree in which they have had a nest. On such occasions I have noticed them hopping about from branch to branch, peering at one, with head first this way and then that, and keeping up this peculiar "cawing" note throughout these antics.

89. ‡ **Tricholæma leucomelan.** Pied Barbet.

Not uncommon, but probably less plentiful than the last species. A favourite nesting-place is in one of the candelabra-like branches of an "umhlonhlo," and I have noticed several nests thus situated.

90. ‡ **Barbatula extoni.** Yellow-fronted Tinker Bird.

Rather uncommon, but I met with it close to Fortusher in 1908, and also on Lucydale and La Concord farms later. This little Tinker Bird closely resembles species of *Cinnyris* in the way in which it hovers at the extremity of some dependent spray of acacia or other flowering tree.

91. **Trachyphonus cafer.** Crested Barbet.

Uncommon, and keeping principally to the shelter of the hills. Observed nesting in May.

92. ‡ **Dendromus bennetti.** Bennett's Woodpecker.

Campothera bennetti (Smith) ; Scl. iii. p. 133.

Sind. "isiqwoqota," also applied to other species.

Rather rare, but I have seen it on the top of the Mawa Range, whilst an individual was noticed on a large "umkuna" at the entrance of our cave for a few minutes on the 15th of June.

93. ‡ **Dendropicos guineensis.** Cardinal Woodpecker.

Dendropicus cardinalis (Gmel.) ; Scl. iii. p. 135.

Uncommon, but found throughout at odd times. It is, perhaps, more often seen in the Mopani veld than elsewhere.

94. ‡ **Colius indicus.** Red-faced Coly.

Colius erythromelon Vieill. ; Scl. iii. p. 99.

This Coly is rather common, and may usually be found in small parties close to where there are "mpafa" trees, showing, in common with "Go-aways," and more especially Guineafowl, a great partiality for the berries.

95. ‡ **Coracias garrulus.** European Roller.

A somewhat scarce summer visitor, which, in 1912, I first noted on February 7, and from then up to April 4 it was present in small numbers. I found this Roller, however, more numerous to the west, on the Ovi River, and I expect it occurs plentifully in the Mopani.

96. ‡ **Coracias caudatus.** Lilac-breasted Roller.

Sind. "ifefe."

Not uncommon at Fortusher from May to September, but it is evidently addicted to local migration, because I did not meet with it until the 26th of May, in 1912.

97. ‡ **Coracias mosambicus.** Purple Roller.

Sind. "itjegela" or "tjelitjwi."

This Roller was more numerous than Moselikatze's

(*C. caudatus*) at Fortusher in 1908, and I more than once saw parties of half-a-dozen or so in the hills—a thing I have never seen in any other district—but I did not notice it at all later.

98. **Bucorvus cafer.** Ground Hornbill.

Bucorax cafer (Boc.); Scl. iii. p. 102.

Sind. "insingisi."

The "Bromvogel," as it is called by the Dutch, is not uncommon in certain localities, but is at all times rather local in its distribution. It is one of our earliest birds to call in the morning, although sometimes beaten by the Redwing, but its deep booming note is seldom heard much after sunrise in the Matopos. It is extremely hard to determine how far this note will carry, but I am of opinion that on a quiet, still morning these birds may be heard almost two miles distant. During the heat of the day, this Hornbill usually frequents the shady situations on kopjes, but on the 6th of September—a very hot day—I saw one in the open valley close to Mpimbo's kraal.

99. ‡ **Lophoceros nasutus epirhinus.** South-African Grey Hornbill.

Lophoceros epirhinus (Sund.); Scl. iii. p. 114.

Sind. "mkoro."

Common and resident. Early in September I saw one of these birds investigating a hole in an "umhlonhlo," and have little doubt that it eventually nested therein. I believe *L. melanoleucus* also occurs more rarely, but have been unable to obtain specimens.

100. ‡ **Halcyon albiventris.** Brown-hooded Kingfisher.

Resident and not uncommon within the hills, where it is frequently found round the bases of kopjes and in well-wooded kloofs.

101. ‡ **Halcyon swainsoni.** Grey-hooded Kingfisher.

In 1908 I found this Kingfisher somewhat plentiful in the hills about Fortusher, but I have no notes of its occurrence later.

102. ‡ **Corythornis cyanostigma.** Malachite Crested Kingfisher.

Sind. "intangaza."

Resident and not uncommon, but addicted to local migration during dry spells.

103. ‡ **Ceryle rudis.** Pied Kingfisher.

Sind. "imwayla."

Uncommon, but occurring on the Umzingwani, Malemi, Ovi, and other rivers, whilst on the 1st of April, 1911, I found it breeding at the Dam. The nest was placed in a bank about 3 feet above the water-level, and was at the termination of a 42-inch drive. The nestlings were clamorous for food.

104. ‡ **Ceryle maxima.** Giant Kingfisher.

The Giant Kingfisher is rare, and only occurs on the more secluded pools of our larger streams.

105. ‡ **Melittophagus meridionalis.** Little Bee-eater.

Resident and common. A peculiar thing about this Bee-eater is the diversity of habits apparent between the birds within and without the hills. On the surrounding veld I have found them frequenting dry spots between kopjes, or at the base of an isolated kopje, and at Fortusher I noticed them principally in the "isiqwalapa"; but within the hills this Bee-eater is practically only found along the watercourses.

106. **Dicrocercus hirundineus.** Swallow-tailed Bee-eater.

On May 29, 1908, I met with several close to Fortusher in a patch of sugar-bush on the Umzingwani road.

107. ‡ **Merops apiaster.** European Bee-eater.

Sind. "nkonjani"—also applicable to the Swallows.

A more or less common summer visitor, and something of a nomad. In 1912, I last saw them on April 18. *M. nubicoides* is also probably an occasional visitor during the summer, although personally I have not seen it here; it, however, occurs to the north in the Bulawayo district, and to the south-west in the Mangwe.

108. ‡ **Upupa africana.** African Hoopoe.

Sind. "lipupu."

Not uncommon, and more numerous in the hills than elsewhere. It may be looked for in the mopani belts, principally on the surrounding veld.

109. ‡ **Irrisor erythrorynchos.** Wood-Hoopoe.

Sind. "inhlaza."

Although practically unknown on Lucydale farm, I found this species quite numerous in the hills proper; but, being a bit of a rover, it appears even there to be somewhat uncommon. I have frequently noticed these birds, on my way out hunting, perched on the top of large boulders lustily calling as the sun rises. At other times they are to be found in their usual parties going noisily through the bush.

110. ‡ **Rhinopomastus cyanomelas.** Scimitar-billed Wood-Hoopoe.

A rare bird, but I have seen it in May on Lonsdale farm, and in August in Mpimbo's valley—on both occasions in mopani.

111. **Caprimulgus fervidus.** Fiery-necked Nightjar.

Sind. "mnambkwa" or "moubani."

On Feb. 11, 1912, I shot a female—one of several flying round a bush after termites. Soft parts: iris hazel; eyelids Naples yellow; legs and feet dark flesh-coloured. Length 9·50, wing 6·35, and tail 5·45 inches.

112. ‡ **Caprimulgus rufigena.** Rufous-cheeked Nightjar.

I have been unable to determine which is our commonest Nightjar—this or the last named. Both species seem to have migratory tendencies.

113. ‡ **Caprimulgus trimaculatus.** Freckled Nightjar.

A rarity, but I have examined a skin obtained in the vicinity of the World's View.

114. ‡ **Caprimulgus fossei.** Mozambique Nightjar.

A male obtained on March 24, 1912, had: iris hazel; bill pale horn with darker tips; legs and feet dark flesh-coloured. Length 10·25, wing 6·50, and tail 5·00 inches!

It is of course a variable species, but this is the largest that I have obtained. This Nightjar will probably prove to be somewhat numerous.

115. ‡**Macrodipteryx vexillarius.** Standard-Wing Nightjar.

Cosmetornis vexillarius (Gould); Scl. iii. p. 42.

Mr. G. E. Henderson informs me that he observed this Nightjar on Lonsdale Farm in 1911.

116. ‡ **Apus apus.** European Swift.

Cypselus apus (Linn.); Scl. iii. p. 25.

A more or less common summer visitor, which, however, in 1912, I only saw in January and February. I believe the brown Swifts occurring in Matabeleland during the rains are referable to the present species, but I must admit that in few cases have I had opportunities for identification, and it is therefore possible that the European species may have been confused with the South-African *Apus barbatus*, which, however, has not, to my knowledge, been yet obtained in Southern Rhodesia.

117. **Apus affinis.** Indian Swift.

Cypselus affinis (Gr. & Hardw.); Scl. iii. p. 27.

I first noticed this rare species on the 7th of February, 1912, but it had been previously recorded from the Matopos, by Messrs. Mennell & Chubb, as a breeding species on Silozwana (Proc. Rhod. Sci. Assoc. vol. viii. 1908, p. 57). These Swifts occurred on Matjanyoni kopje, and when I saw them they had only just arrived; they were restlessly flying about, and continually hanging round the large cavities wherein Cliff Martins and Swallows were nesting. On Feb. 25 I noticed these Swifts in pairs and located one nest within an old one of *Hirundo puella*. Ten days later I counted six or seven pairs and saw several nests attached to the roof of a cave—they appeared to be made of feathers principally, agglutinated together. Two or three birds seem to build together, and the nests are very small compared with those of the Swallows. These Swifts as a rule kept to the kopjes, and only on one occasion did I see them down at the river, which was nearly a mile distant.

[To be continued.]

XI.—*Notes on the Ornithology of Cyprus.*

By F. R. S. Baxendale, M.B.O.U.

As Mr. J. A. Bucknill, who contributed notes on the local avifauna of Cyprus to this Journal from 1909 till January 1913, has been transferred, on promotion, from that island to Hong Kong, and since then to Singapore, I have been asked to supply further notes on the same subject *.

I propose to follow Mr. Bucknill's general lines in making my notes.

The autumn and winter of 1912 were normal, and the winter visitors were not particularly numerous, but in the following spring, the rains continued later than usual, and the consequence was that the reservoir at Kouklia and the freshwater lake, both in the Famagusta District, afforded suitable breeding-places for several varieties of water-birds, and many migrants stayed longer than usual owing to the abundant food-supply found in these sheets of water.

The same was the case again last spring, and we have been able to add several novelties to our list of visitors, as well as to obtain the eggs of others which hitherto had not been definitely proved to have nested in the island.

I think it highly probable that other birds whose nesting has not yet been recorded laid their eggs in the vicinity of the before-mentioned lakes; although I am pretty certain that some of the late-staying birds were non-breeding ones. The undeveloped breeding-organs and non-nuptial plumage of a number of specimens that I examined led me to this conclusion.

Unfortunately I did not have an opportunity of exploring the reed-beds and islets of the Kouklia reservoir after the 31st of May. On that date I saw Little Bitterns, Glossy Ibises, Ruffs and Reeves, besides the more common birds generally found there at that time of the year.

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* For previous contributions on this subject see 'Ibis,' 1909, pp. 569-613; 1910, pp. 1-47, 385-435; 1911, pp. 632-656; 1913, pp. 2-14. A sketch-map of Cyprus will be found in 'Ibis,' 1913, pl. ii.

At the freshwater lake, which I have had many opportunities of visiting, I saw Curlew-Sandpipers up till the 6th of June, and during June and July I noted Common Sandpipers, Geoffroy's Greater Sand-Plover, Redshanks, Reeves, Gull-billed Terns, and Slender-billed Gulls, also Green and Wood Sandpipers. I obtained specimens of most of these birds so as to be sure of my identification.

I noted a single Pelican and a Spoonbill there during June, and in July two Spoonbills frequented the lake until it quite dried up in the beginning of August. Of course, the usual nesting-birds were to be found there up till that date.

I was able to visit the Klides Islands again during the spring. A lighthouse, with a revolving light, was erected there in 1913, but it does not seem to have interfered with the nesting-birds. My visit was on the 19th of April, and I found the Lesser Peregrine's eyrie where it has been for the last three years. There were four young birds in it beginning to show feather.

The Herring-Gulls were nesting as usual, and some of their nests were not more than a hundred yards from the lighthouse. The young Shags had all left their nests and were swimming round the islands with their parents.

Sailing back to the mainland I noticed a Shearwater, but I was not near enough to make a good identification. I saw a Great White Heron on three occasions flying along the shore within a few miles of the islands.

Apparently I was a little too early to meet the full swing of the migration along the Karpas promontory. There were, however, a good many Shrikes and Wheatears of several varieties. I also met with large flocks of Ortolans, which I had only hitherto seen in small parties.

In the accompanying notes I have used the nomenclature adopted in the 'Hand-list of British Birds' and Hartert's Vögel pal. Fauna.

Turdus musicus Linn. (*Turdus iliacus* auct.)

On the 3rd of January, 1913, I found a Redwing with a bunch of Song-Thrushes that had been caught on bird-lime and were being hawked round for sale.

This, I believe, is the second recorded instance of a Redwing being obtained in the island.

Monticola solitarius (Linn.).

On the 4th of May, 1913, I found a nest of the Blue Rock-Thrush containing four highly incubated eggs. The nest was in a hole in one of the rooms of the ruins of Kantara Castle, which is situated on the northern range of hills.

This year I got a clutch of four fresh eggs from the same ruin.

Luscinia svecica cyanecula (Wolf). (*Cyanecula wolfi.*)

I shot a male White-spotted Bluethroat at the freshwater lake in March 1913. This is the first and only one that I have seen, and the species has not been recorded from Cyprus since 1901.

The red-spotted bird I have seen on a number of occasions and have obtained specimens.

Sylvia melanothorax Tristram.

The Palestine Warbler is quite a common bird throughout the Karpas or northern range of hills during the summer months, and it can be found all through the winter in the scrub near the coast.

I procured a nest with four fresh eggs in May 1913. It was placed on the ground under a bush, and was principally composed of loose strips of juniper-bark. Last spring I obtained another nest containing three eggs. The nest was said to be placed low down in a gorse-bush and was made of stiffer materials than the first one that I procured, though a good deal of juniper-bark was used in its construction; and a third nest, also containing three eggs, was brought to me in September which was said to have been taken at the end of August. The eggs were not incubated, but appeared to be stale. As I have seen young birds flying about with their parents as early as the 17th of May, it is probable that these birds nest twice in the year.

Regulus regulus interni Hartert.

In December 1912 I obtained two specimens of this Golden-crested Wren, and later on I obtained another. A fourth was shot in the early spring of 1914, and others were seen and heard.

These birds were all found in the pine-trees close to Famagusta town.

There is no previous record of this Goldcrest being procured in Cyprus. Dr. Hartert kindly identified the skins for me.

Anthus campestris (Linn.).

I saw several Tawny Pipits in the Messaoria plain in the spring of both 1913 and 1914, and I obtained specimens. As I saw the birds later in the year as well, I think it is quite probable that they nest here.

Mr. M. J. Nicoll identified a specimen for me.

Passer hispaniolensis (Temm.).

In 1913 I saw several pairs of Spanish Sparrows nesting in some pepper-trees in the yard of the police-station at Ayios Theodoros, but the nests were destroyed before I procured the eggs.

Last spring, however, I found them nesting again in the same trees, and took a clutch of their eggs. There were five nests, and, as the birds were by no means shy, it was easy to identify the males. The ordinary House-Sparrow in Cyprus nests in holes, and I have never seen their nests in trees.

Emberiza hortulana Linn.

On the 6th of July, while on the northern range of hills, a clutch of four Ortolans' eggs was brought to me. I was informed that the nest was found on the range some twenty-five days previously. The Rev. F. C. R. Jourdain identified the eggs.

This is the first recorded instance of Ortolans nesting in Cyprus.

Alcedo ispida Linn.

Some Kingfishers appear to be resident in the island. They were seen at Kouklia reservoir in June and July, and on the 1st of August last one flew past a tennis-court in Famagusta and was noticed by several people.

Asio otus (Linn.).

The Long-eared Owl, of which I believe there is only one previous record in Cyprus, was seen on several occasions during the winter of 1912–1913. Two specimens were obtained.

Buteo ferox (S. G. Gmel.).

On the 28th of December, 1912, Mr. C. B. Horsbrugh obtained a female Long-legged Buzzard at Kalochorio in the Larnaca District. On the 19th of January of the following year I shot a fine female, and ten days later I shot a male. Both birds were within seven miles of Famagusta. The crop of the female that I shot contained three pieces of snake and three frogs. These are the only specimens obtained in the island that are recorded, though Lord Lilford had no doubt that he had observed one near Cyprus from his yacht in 1875.

Mr. W. L. Sclater helped me to identify the skin of the female which I obtained.

Haliaëtus albicilla (Linn.).

A specimen of the Sea-Eagle has at last been obtained. It was purchased by Mr. C. B. Horsbrugh in Larnaca on the 29th of January, 1913, having been shot at the salt lake near that town.

Some of these Eagles are seen every year. I noticed a pair in adult plumage sitting on the shore of Kouklia reservoir on the 11th of June, 1912, and I have often seen single birds there and also at the freshwater lake.

Aquila maculata (Gm.).

While Snipe-shooting on Avgashida Marsh with Mr. B. J. Amirayan on the 26th of December, 1912, we saw a Lesser Spotted Eagle. Mr. Amirayan was fortunate in being able to stalk the bird and shoot it. It was a male in good plumage. Mr. W. L. Sclater was kind enough to help me to identify the skin.

This bird has not been previously recorded from Cyprus.

Falco cherrug J. E. Gray.

I shot a male Saker while Snipe-shooting on Avgashida Marsh on the 6th of December, 1913. This is the second specimen that I have obtained.

Falco peregrinus Tunstall.

I obtained a fine Peregrine Falcon in adult plumage on the 10th of May near Famagusta. It has never been proved that this Falcon nests on the island, but I should say that this is perhaps evidence in favour of its breeding locally.

Falco biarmicus feldeggi Schlegel.

On the 1st of February last I shot from my carriage a fine female Lanner about two-and-a-half miles from Famagusta. It is the first record of this Falcon occurring in Cyprus.

Falco subbuteo Linn.

Several of these little Falcons have been obtained in the past few years, but it was not until 1913 that it was ascertained that they nested locally. On the 25th of July of that year a villager found a clutch of four eggs in a deserted Hooded Crow's nest in the Larnaca District. Mr. Horsbrugh, to whom the eggs were brought, describes them as less brilliantly coloured than typical Kestrel's. He shot a hen-bird on the 30th of June, 1913, and found an egg nearly developed in the oviduct.

Egretta alba (Linn.). (*Ardea alba.*)

I noticed a single Great White Heron on the 19th and again on the 20th of April last near Apostol Andrea Monastery, when on my way to and on my return from the Klides Islands. Mr. E. H. D. Nicolls, our Director of Public Works, informs me that he saw a pair in the Limassol District during the spring. These birds are evidently very rare visitors, while the Little Egret can be seen, generally in pairs, every spring.

Platalea leucorodia Linn.

For the past three years in the spring I have seen Spoonbills at the freshwater lake. On the 12th of December, 1912, I obtained a male specimen shot at Kouklia reservoir out of a small flock.

A pair frequented the freshwater lake last summer until the 2nd of August, when the lake dried up. I do not think that they nested there, as the birds were always to be seen together, and there was no suitable nesting-site for them.

Marmaronetta angustirostris (Ménétr.).

On the 24th of May last I was shown the nest of a Marbled Duck, which had been found by some labourers who had been cutting drains on the edge of the freshwater lake. There were ten fresh eggs. The labourers, who had seen the duck leave the nest, described the bird to me as very light-coloured.

The Rev. F. C. R. Jourdain has identified the down from the nest as that of the Marbled Duck.

Colymbus nigricollis (Brehm). (*Podiceps nigricollis.*)

For several years we have felt certain that the Eared Grebe nested in the Kouklia reservoir, as numbers were to be seen there all the year round.

On the 1st of June, 1913, I found a colony of these birds nesting in this reservoir. There were no less than eighteen nests close together. I recorded this in the October issue of this Journal in that year.

Last summer, at the same place, I found twelve nests with eggs in them and other nests ready for eggs.

It is now established that the three species of Grebes which are found in Cyprus have become resident.

Mr. Bucknill has previously recorded in this Journal that the Great Crested and Eared Grebes were only observed after the Kouklia reservoir was constructed. The Little Grebe was the only member of this family noticed in the island previously.

Glareola pratincola (Linn.).

On the 14th of June, 1913, Mr. B. J. Amirayan and I found five nests containing eggs of the Pratincole at the freshwater lake. There is no record of their having nested in Cyprus before.

Charadrius geoffroyi Wagl.

This Sand-Plover was frequenting the freshwater lake in small flocks during June 1913, when I obtained two specimens. Last summer I saw them from the middle of June up to the end of July at the same place, and I shot several specimens. The last specimen was obtained on the 17th of July, and Mr. M. J. Nicoll, to whom I sent the skin, pronounces it to be that of an immature bird. It differed in plumage from the birds I shot in June, which I took to be non-breeding birds, as their genital organs were not well developed and their plumage non-nuptial.

Charadrius morinellus Linn. (*Eudromias morinellus.*)

In 1909 Mr. Bucknill obtained the only recorded specimen of the Dotterel in Cyprus, but the skin was badly damaged. On the 9th of November, 1912, my cook saw a number of these birds for sale and brought me three, but only one, a female, was fit to skin. This skin, however, was eaten by a cat two days afterwards. I was rather pleased to see that the arsenical soap on the skin disagreed with the cat.

Fortunately another bird was purchased in the bazaar two days afterwards, also a female, and its skin is properly preserved.

Hoplopterus spinosus (Linn.).

Mr. B. J. Amirayan and I found a nest of the Spur-winged Plover with five slightly incubated eggs at the Kouklia reservoir on the 1st of June, 1913. This is the first recorded instance of these eggs being procured in Cyprus, I believe.

Last summer I saw several birds at both the reservoir and the freshwater lake, but I did not find their eggs.

Machetes pugnax (Linn.).

These birds, which usually arrive in large numbers in February and remain until about the middle of May, were to be found unusually late last summer.

I saw a flock of about thirty Reeves on the 21st of June at the freshwater lake, and I shot two of them to be quite sure of their identity. The last date on which I saw them was the 3rd of July. I saw no Ruffs after the 27th of May.

Erolia ferruginea (Brünn.). (*Tringa subarquata.*)

The Curlew-Sandpiper is usually found in Cyprus during the winter, but in 1914 there were flocks of them at the lake during May, and I shot one bird out of a pair on the 6th of June.

Tringa hypoleuca Linn. (*Totanus hypoleucus.*)

The Common Sandpiper remained all last summer with us, as I found them on every occasion that I visited the freshwater lake, and I saw them elsewhere. I feel sure that they nest in the island.

Tringa glareola Linn. (*Totanus glareola.*)

These birds reappeared at the freshwater lake at the end of June. They were in small flocks, and remained until the lake dried up.

Tringa ocrophus Linn. (*Totanus ochropus.*)

A few Green Sandpipers remain in the island through the winter, and their numbers are added to in the spring migration until they leave in May.

Last summer a few pairs suddenly reappeared at the freshwater lake in June, and remained there till the water dried up at the end of July.

Tringa totanus (Linn.). (*Totanus calidris.*)

The Redshank is usually met with in winter and early spring, but last summer it appeared again at the lake at the end of June, and I shot one of a pair on the 28th of that month. It was a female with an undeveloped ovary. I saw single birds and small flocks of them until the end of July.

Phalaropus lobatus (Linn.). (*Phalaropus hyperboreus.*)

This unexpected visitor I shot at the freshwater lake on the 21st of June last. I saw no others. It was a male bird with testes largely developed.

Himantopus himantopus (Linn.). (*Himantopus candidus.*)

The Black-winged Stilt now breeds regularly at the Kouklia reservoir and the freshwater lake.

I saw about a dozen nests at the reservoir in one place on the 31st of May last, and two or three weeks later, when suitable nesting-sites appeared above the water in the lake, I saw a number of nests. Most of the nests at the latter place were robbed, and I saw no young birds when I counted later a flock there consisting of over ninety birds.

Hydrochelidon leucoptera (Temm.).

There was a flock of about twenty White-winged Black Terns frequenting the lake from May, until after the 17th of July. Several of these birds were in immature plumage.

Sterna nilotica Gm. (*Sterna anglica.*)

For the past three years I have observed the Gull-billed Tern at the time of the spring migration. The first date was the 24th of May, 1912, when I shot a specimen at Kouklia reservoir. In 1913 I shot one of a pair on the 7th of June at the freshwater lake, and on the 28th of June last I saw a pair at the same place.

Larus gelastes Thienem.

On the 13th of June last I shot one of a pair of Slender-billed Gulls at the lake. A fortnight later I saw a single bird, and on the 9th of July I saw three at the same place. I was hoping that they would nest, but I did not see them again.

There is no record of this Gull having been previously obtained in Cyprus.

Larus marinus Linn.

At the freshwater lake on the 31st of May, 1913, I saw a bird which was undoubtedly a Great Black-backed Gull, and a week later I saw a bird which was probably the same species. It was very wary, and I could not approach near enough to shoot at it with any hope of success.

Houbara undulata macqueenii (Gray & Hardw.).

On the 9th of November, 1912, a male specimen of this Bustard was brought to me. It was alone when shot, near the village of Enkome, some five miles from Famagusta.

Later on another specimen was brought to me mangled almost beyond recognition.

On the 22nd of December of the same year, while driving past Salamis plantation, a Bustard which I took to be of this species got up close to the road.

Mr. W. L. Sclater helped me to identify my specimen.

XII.—*Report on the Birds collected by the late Mr. Boyd Alexander (Rifle Brigade) during his last Expedition to Africa.*—Part III.* *The Birds of Annobon Island.* By DAVID A. BANNERMAN, B.A., M.B.O.U., F.R.G.S.

THE third report on the Alexander collection, which is here issued, is an account of the birds of Annobon, the last island which Boyd Alexander visited before commencing his journey on the mainland. Annobon is much smaller than either St. Thomas or Prince's Island, and has an area of only six and a half square miles. It is, in fact, little more than a volcanic rock rising abruptly from the water. It lies about 60 miles south of St. Thomas and about 100 miles west of Cape Lopez in French Congo and belongs to Spain. Its avifauna is consequently very limited, but, notwithstanding its small extent, it is the home of at least four species or subspecies which are found nowhere else in the world. This is particularly striking, as there are only six resident land-birds on the island.

The four forms restricted to Annobon are :—

1. *Zosterops griseovirescens* Bocage.
2. *Terpsiphone newtoni* Bocage.
3. *Scops capensis feæ* Salvadori.
4. *Haplopelia hypoleuca* Salvadori.

In this paper I have adhered to the arrangement followed in my account of the Birds of Prince's Island ('Ibis,' 1914, pp. 596–631) and the Birds of St. Thomas ('Ibis,' 1915, pp. 89–121). Birds marked with an asterisk are represented in the Alexander collection in the British Museum.

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* For Part I. see 'Ibis,' 1914, pp. 596–631 & Part II. 'Ibis,' 1915, pp. 89–121.

Very few papers dealing with the Birds of Annobon have appeared. Those of which I have made use, including the two great works on African Birds, are :—

Bocage. Jorn. Sci. Lisboa, 1893, pp. 17–18, 44–45 ; 1903, pp. 55–58.

Salvadori. Mem. Accad. Sci. Torino, 1903 (Orn. Golfo d. Guinea, iii. pp. 93–98).

Reichenow. Vögel Afrikas, vols. i.–iii., 1900–1905.

Shelley. Birds of Africa, vols. i.–v., 1896–1912.

The following account of Annobon is taken from 'Boyd Alexander's Last Journey,' edited by Mr. Herbert Alexander, to whom full acknowledgments are due.

Boyd Alexander's Description of Annobon.

About 9 a.m. on the 13th of February (1909) the faint outline of Annobon came into sight, and we reached the island at 11 o'clock.

Annobon is a volcanic rock rising abruptly out of the sea and clothed with scrubby growth towards the top. The white building of the Roman Catholic Mission, a little way above the beach and surrounded by palm-growth, is the first object to catch the eye. Then close to the shore itself, amongst a picturesque grove of cocoanut-trees, are rows of oblong huts containing almost all that Annobon can boast of in the way of inhabitants. In the interior of the island, especially round the lake, are cassada farms, and bananas are roughly cultivated. The inhabitants number about 1300 souls, and I do not think that I have ever seen a more nondescript-looking lot. It would be difficult, from a racial point of view, to place them.

We landed soon after 12 o'clock, and the next day left at 6.30 a.m. for the lake, which we took about three-quarters of an hour to reach. It is one of the most remarkable geographical features I have seen in Africa. After an ascent of some 1300 feet one is suddenly confronted with a circular lake, about a mile in circumference. It is like the deep crater of a volcano, tall forest-trees rising up in tiers all round it to a height of some 500 feet. Beyond, the ground begins to rise again till it attains a height of some 3000 feet, forming a narrow watershed, and the whole way the ground falls steeply on both sides to the sea. It is thickly wooded, and this fact raised my hopes of getting a good collection, but after many fatiguing tramps the birds only represented nine species, all of which were previously known to science.

The north side of the island is less thickly wooded—in fact, there are portions of open grass-country, interspersed with plots of cassada and yam, grown by the natives. There is also a fine orange on the island, large and with a thick skin which peels off easily, but the inhabitants live chiefly on fish. On the south side of the island there is a small colony called San Pedro, numbering about thirty people.

The rows of oblong wooden huts of San Antonio, ensconced in a thick grove of cocoanut-trees, is typical of the African villages one sees depicted in the older books of travel—those of Stanley, for example.

The island has poor soil, very stony and volcanic. We remained here until February 20th, when we left in the small Spanish steamer ‘Annobon.’

List of Species.

1. *Zosterops griseovirescens.

Zosterops griseovirescens Bocage, Jorn. Sci. Lisboa, 1893, pp. 18, 44; id. 1903, p. 56; Shelley, Birds of Africa, ii. 1900, p. 186; Salvadori, Orn. Golfo d. Guinea, iii. 1903, p. 94; Bannerman, Ibis, 1912, p. 237.

a–d. ♂ ♂ ♂ ♀ ad. (Nos. 2, 6, 7, 8). Lake Annobon. 14. ii. 09.

e, f. ♂ ♂ ad. (Nos. 3, 5). Lake Annobon. 17. ii. 09.
g. ♂ ad. (No. 1). ,, ,, 18. ii. 09.
h. ♂ ad. (No. 4). ,, ,, 19. ii. 09.

Zosterops griseovirescens can be distinguished at a glance from the other members of the genus inhabiting the islands in the Gulf of Guinea by its exceptionally large size—the wing measuring from 60–63 mm.—and by the colour of the underparts, which are strongly washed with vinaceous brown.

The Annobon White-eye is confined to the island, where Francisco Newton, who discovered it in 1892, reported that it was common and remarkable for its melodious song. Signor Fea, who collected on Annobon in April and May 1902, noted that *Z. griseovirescens* was abundant in all the forest-region which covers the greater part of the island. In 1912, Mr. W. P. Lowe visited the island and procured a small series of the White-eye, which he found to be exceedingly plentiful. At the time of his visit, on the 18th of December, he shot one example, which was nesting.

2. *Terpsiphone newtoni.

Terpsiphone newtoni Bocage, Jorn. Sci. Lisboa, 1893, p. 44; id. 1903, p. 55; Salvadori, Orn. Golfo d. Guinea, iii. 1903, p. 94.

a. ♂ ad. (No. 2). Lake Annobon. 14. ii. 09.
b. ♂ ad. (No. 1). „ „ 16. ii. 09.
c. ♂ ad. (No. 3). „ „ 17. ii. 09.

Newton's Paradise Flycatcher is said by its discoverer, after whom it has been named, to be generally distributed over the island, where it is known by the name of "Bibi." It is particularly common round the margin of the lake.

T. newtoni closely resembles *T. nigriceps* (Hartl.), from which it is readily distinguished by its slate-coloured tail, while in *T. nigriceps* the tail is of the same colour as the back.

3. Clamator glandarius.

Oxylophus glandarius (Linn.): Bocage, Jorn. Sci. Lisboa, 1893, p. 44.

Coccystes glandarius Salvadori, Orn. Golfo d. Guinea, iii. 1903, p. 95; Bocage, Jorn. Sci. Lisboa, 1903, p. 55.

A single male example was obtained by Newton, who considered it to be a migrant.

4. ***Otus capensis feæ.**

Scops feæ Salvadori, Orn. Golfo d. Guinea, iii. 1903, p. 95.

a. ♀ ad. (No. 1). Annobon. 16.ii.09.

Fea's Scops Owl was described by Count Salvadori, who received six specimens from the collector, after whom it has been named. In the original description *Otus capensis feæ* is said by Count Salvadori to resemble *Otus capensis* Smith, but to be darker in colour, and to have the black shaft-streaks in the middle of the feathers of the belly wider, either with pale spots or bands on the inner web, less distinct than in *O. capensis*, and disappearing towards the base.

The wing-measurements are given as 120–125 mm. in the six examples obtained by Fea. The single bird in the Alexander collection has the wing (which is very worn) 135 mm. in length. Probably all the specimens collected by Fea were males, which would account for the difference of the length of the wing.

In other respects this specimen agrees fairly well with the original description. The shaft-streaks of the feathers of the underparts are particularly broad. Unfortunately the bird has been badly injured by shot and will bear very little handling.

Fea gives the following field-notes on this species :—"I found the birds abundant in deep forest between 400–500 metres. Its note recalls that of our 'Gufo' . . . . very like that of *Strix thomensis*, but of a little higher tone. I heard it calling also in the daytime."

5. **Milvus ægyptius parasitus.**

Falco parasitus Daud. Traité, ii. 1800, p. 150.

Milvus ægyptius (Gmel.) ; Bocage, Jorn. Sci. Lisboa, 1893, p. 44 ; Salvadori, Orn. Golfo d. Guinea, iii. 1903, p. 44.

Said to be rare. An example recorded from the island by Bocage, no doubt belongs to this form.

The Egyptian Kite of central Africa must be known as

M. æ. parasitus (Daud.), as pointed out by Dr. Hartert (Bull. B. O. C. xxxiii. 1914, p. 90). This race differs from typical *M. ægyptius* in being smaller, browner, and darker throughout.

6. Phaëthon lepturus.

Lepturus candidus Briss. ; Bocage, Jorn. Sci. Lisboa, 1893, p. 45 ; id. 1903, p. 57.

Phaëthon lepturus Lacép. et Daud. ; Salvadori, Orn. Golfo d. Guinea, iii. 1903, p. 98.

Bocage examined two examples of this Tropic-bird from Annobon. They were obtained on the Pico Estephania, at an elevation of 500 metres.

7. Sula leucogastra.

Sula fiber (Bodd.); Bocage, Jorn. Sci. Lisboa, 1893, p. 45 ; Salvadori, Orn. Golfo d. Guinea, iii. 1903, p. 98.

Sula leucogastra Bocage, Jorn. Sci. Lisboa, 1903, p. 57.

Bocage received two males and two females of this species from Francisco Newton, who procured them on Tortuga islet.

8. *Ardea gularis.

Ardea gularis Bosc, Actes Soc. Hist. Nat. Paris, i. 1792, p. 4.

a. ♂ ad. (No. 1). Lake Annobon. 20. ii. 09.

A single adult example of this Heron was obtained by Boyd Alexander. It is the first record from the island.

9. Butorides atricapillus.

Butorides atricapillus (Afzel.) ; Bocage, Jorn. Sci. Lisboa, 1893, p. 44 ; id. 1903, p. 57 ; Salvadori, Orn. Golfo d. Guinea, iii. 1903, p. 97.

Bocage records the only example of this species which has been obtained in Annobon.

10. Numenius phæopus.

Numenius phæopus Linn. ; Bocage, Jorn. Sci. Lisboa, 1893, p. 44 ; id. 1903, p. 57 ; Salvadori, Orn. Golfo d. Guinea, iii. 1903, p. 97.

Bocage received a female from the islet of Tortuga.

11. Anous stolidus.

Anous stolidus (Linn.); Bocage, Jorn. Sci. Lisboa, 1893, p. 45; id. 1903, p. 57; Salvadori, Orn. Golfo d. Guinea, iii. 1903, p. 97.

Both Newton and Fea obtained specimens of the Noddy. The latter says that it is less common than the following species (*M. leucocapillus*), in whose company it is to be found.

12. Micranous leucocapillus

Anous leucocapillus (Gould); Bocage, Jorn. Sci. Lisboa, 1893, p. 45; id. 1903, p. 57.

Micranous leucocapillus Salvadori, Orn. Golfo d. Guinea, iii. 1903, p. 97.

According to Fea this Tern is very abundant on the rocky and less accessible coasts of the islands.

13. Puffinus griseus.

Puffinus griseus (Gmel.); Salvadori, Orn. Golfo d. Guinea, iii. 1903, p. 98; Bocage, Jorn. Sci. Lisboa, 1903, p. 58.

Bocage records a specimen of this Shearwater, which was taken at sea by the Annobon fishermen.

In Boyd Alexander's collection there is a bird of this species, which he shot off Santa Isabel (Fernando Po) on the 8th of January.

14. *Gallinula chloropus meridionalis.

Gallinula c. meridionalis Brehm; Bannerman, Ibis, 1915, p. 116.

Gallinula chloropus (Linn.); Bocage, Jorn. Sci. Lisboa, 1893, p. 44; id. 1903, p. 57; Salvadori, Orn. Golfo d. Guinea, iii. 1903, p. 97.

a, b. ♀ ♀ (Nos. 1, 2). Lake Annobon. 16. ii. 09.

Two examples of the small African Moorhen were obtained by Alexander at Lake Annobon.

15. *Turturœna malherbei.

Turturœna malherbei (Verr.); Bocage, Jorn. Sci. Lisboa, 1893, p. 44; id. 1903, p. 56; Salvadori, Orn. Golfo d. Guinea, iii. 1903, p. 96.

a–g. ♂ ♀ ad., imm., et juv. (Nos. 1–7). Annobon. 21. ii. 09.

In adult plumage this Pigeon has the breast and belly grey, and loses the speckled rufous feathers which are found in immature birds. In fact, in the above series, if I am correct in my surmise, there is only one specimen (No. 4) which can truly be considered to have gained the fully adult plumage. In several immature specimens the crown of the head is thickly covered with rufous-bespeckled feathers, while in others, which have already begun to assume the green-glossed feathers of the mantle and nape, there is only a small patch of rufous feathers on the hind crown. These rufous feathers are entirely wanting in the adult, and disappear first from the head and lastly from the breast.

Fea's notes on *Turturœna malherbei* in Annobon are as follows:—"Very common in the dense forest between 400–500 metres. Its guttural note is tiresomely monotonous, as it calls incessantly from dawn till nightfall. The natives call it 'Lola esalibavan.'"

16. Haplopelia hypoleuca.

Haplopelia hypoleuca Salvadori, Orn. Golfo d. Guinea, iii. 1903, p. 96.

Boyd Alexander did not succeed in procuring an example of this rare Pigeon, which was discovered on the island of Annobon by Fea.

The type, which is in the Turin Museum, is described at length by Count Salvadori in his paper quoted above.

Fea found it rare. Locally it was known as "Lola sän-sän."

We therefore have four representatives of the genus *Haplopelia* inhabiting the islands in the Gulf of Guinea.

17. *Numida meleagris.

Numida meleagris Linn.; Salvadori, Orn. Golfo d. Guinea, iii. 1903, p. 97; Bocage, Jorn. Sci. Lisboa, 1903, p. 57.

a. ♂ ad. (No. 1). 16.ii.09.

The Guinea-fowl is not rare on Annobon, according to Fea. Alexander only procured one example, which I cannot distinguish from typical *N. meleagris*. Probably it has been introduced from the mainland.

XIII.—*On a Collection of Birds from British East Africa and Uganda, presented to the British Museum by Capt. G. P. Cosens.*—Part II. ACCIPITRIFORMES—CYPSELI. By CLAUDE H. B. GRANT, F.Z.S., M.B.O.U. *With Field Notes by the Collector,* WILLOUGHBY P. LOWE, M.B.O.U.*

(Plate IV. and Text-figures 3 & 4.)

INTRODUCTION.

MR. Willoughby Lowe has drawn my attention to the altitude given by him of Lake Hannington, *i. e.* 6700 ft., whereas the maps give the altitude as 6200 ft., the difference of 500 ft. being due, Mr. Lowe tells me, to his aneroid having become slightly deranged.

This second part covers 78 species and subspecies, making a total of 170 to the end of the Swifts, and the new subspecies described herein or in the Bulletin of the British Ornithologists' Club are four in number, as follows:—

Poicephalus meyeri neavei, Halcyon leucocephala ogilviei, Irrisor erythrorhynchus ruwenzoræ, and *Melittophagus variegatus bangweoloensis.*

I have again to thank the gentlemen named in Part I. for their continued great assistance and help; while to Mr. Rothschild and Dr. Hartert, and to Dr. Clubb I am indebted for the kind loan of several valuable specimens from Tring and Liverpool.

I regret that through an oversight Capt. Cosens' name was misspelled in the first part of this paper.

SYSTEMATIC LIST.

93. **Serpentarius serpentarius.** Secretary Bird.

Falco serpentarius J. F. Miller, Var. subjects Nat. Hist. 1779, pl. xxviii.: Cape of Good Hope.

In this original work examined by me at the British Museum Library, the name is found in the accompanying letterpress as follows:—

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* For Part I., with map of route, see p. 1.

"Tabula XXVIII.

Fig. A. *Falco serpentarius*, Lin. Syst. Nat. Classis ii. Ordo i. Genus xliv. Spec. 1. Habitat, Cap. B. Spei.

Fig. B. Caput magnitudine naturali."

The plate itself is not superscribed with the name as is the one in the 'Cimelia Physica,' published by the same author in 1796, but it bears at the bottom the following: "Painted, Engraved and Published according to the Act 1779 by John Frederick Miller."

a. ♂ ad. Baringo, 4000 ft. Dec. 28.

Total length in flesh: 53¾ inches. Wing: 670 mm.

In good plumage and still moulting.

The dozen specimens before me show but slight variation throughout south and east Africa.

In the National collection the typical form is represented by a bird from Deelfontein, others from Orange River Colony, Transvaal, and Mashonaland being similar. Birds from Masailand, British East Africa, and Abyssinia are very slightly lighter and whiter below, but are hardly distinguishable from specimens from the Transvaal.

These have been named *S. s. orientalis* Verr. (P. Z. S. 1856, p. 348: East Africa), but I cannot see sufficient evidence for their separation from the South African form. In the J. f. O. 1904, a plate is given of the two forms, and great emphasis is laid on the extent of the bare skin around the eyes; this is found to be of no consequence when specimens are compared.

Two specimens in the Museum from the Sudan which died in the Zoological Gardens have the crest-feathers broader and longer, and the back and wing-coverts are intermingled with darker feathers; these characters may, however, be due to captivity, so no reliance can be placed on them. These specimens have been named *S. gambiensis* Ogilby (P. Z. S. 1835, pp. 104 & 105: Senegambia), but they may not have been compared with Gambian birds.

[Irides brown, bare skin orange, above eye red; bill light bluish horn; legs and toes flesh-colour. Contents of stomach lizards. Common, frequently seen in pairs, and generally very wild.]

94. **Pseudogyps africanus africanus.** Lesser African Vulture.

Gyps africanus Salvad. Not. Stor. R. Accad. Torin. 1865*, p. 133 : Sennaar.

a. ♀ ad. 40 miles N.W. of Baringo, 3400 ft. Jan. 1.

Total length in flesh : 32⅛ inches. Wing : 580 mm. Weight : 10 lbs.

In quite good and very little worn dress.

The half a dozen specimens before me of this Vulture do not allow me to discuss finally the four described races, which are as follows :—

Pseudogyps africanus africanus Salvad. op. cit.

P. a. schillingsi Erl. J. f. O. 1904, p. 150 : Mkomasi, German E. Africa.

P. a. fülleborni, Erl. op. cit. p. 151 : Rukwa lake, German E. Africa.

P. a. zechi Erl. op. cit. p. 152 : Kratchi, Togoland.

The specimens before me show that the Baringo bird agrees well with the specimen from near the type locality of *P. a. africanus,* as also does one from Guas N'gishu, north-east of Victoria Nyanza.

One from Busongora, Uganda, is much paler, another from Zomba, Nyasaland, is darkish, another from Dakar, Senegal, is rather fulvous and worn, and yet another from Humbe, Angola, is distinctly pale.

I should not be surprised if a larger series will show *P. a. schillingsi* and *P. a. fülleborni* to be synonyms of *P. a. africanus,* the range of which appears to be about from its type locality to Nyasaland.

The pale Angola bird may or may not be a constant form, and in the former case would require a name, and the bird from Senegal may or may not be *P. a. zechi* of Togoland.

[Irides brown, bare skin black ; legs and toes black. Abundant, and seen in company with *Otogyps auricularis.*]

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* The outside cover of the part of the Not. Stor. in which this paper is found bears the date 1869.

95. **Lophogyps occipitalis.** White-headed Vulture.

Vultur occipitalis Burch. Trav. ii. 1824, p. 329: Makkwarin River, nr. Kuruman in Bechuanaland.

a. ♂ ad. Weiwei River, Rift Valley, 8000 ft. Jan. 8.

b. ♀. 30 miles N.W. of Baringo, 6800 ft. Jan. 31.

Total length in flesh: ♂ 31¼ inches; ♀ 33 inches.

Wing: ♂ 640 mm.; ♀ 605 mm.

Both are in good plumage: the female has the greater part of the feathering of the crown and nape brown, which apparently shows immaturity.

[Irides brown; bill red, tip black; cere bluish green; bare skin pinkish blue; legs and toes flesh-colour. Found sparingly and rather local.]

96. **Neophron percnopterus.** Egyptian Vulture.

Vultur percnopterus Linn. Syst. Nat. 10th ed. 1758, p. 87: Egypt.

a. ♀ ad. Mt. Suswa. Sept. 26.

Total length in flesh: 29½ inches. Wing: 531 mm.

In somewhat worn plumage.

[Irides brown; head orange; bill greyish horn; legs and toes white. Scarce as compared with other Vultures.]

97. **Neophron monachus.** Hooded Vulture.

Cathartes monachus Temm. Pl. Col. vol. i. 1823, pl. 222: Senegal.

a. ♀ ad. Amala River. Oct. 12.

Total length in flesh: 28 inches. Wing: 490 mm.

In but slightly worn dress.

[Irides brown; bill bluish brown; head bluish white; legs and toes bluish white.]

98 **Circus pygargus.** Montagu's Harrier.

Falco pygargus Linn. Syst. Nat. 10th ed. 1758, p. 89: England.

a. ♂ ad. 20 miles N. of Nakwai, 5800 ft. Dec. 22.

Total length in flesh: 18 inches. Wing: 368 mm.

In fresh plumage and still moulting.

[Irides yellow; bill black; legs and toes yellow. Several of these handsome birds were seen hawking round our camp.]

99. **Circus macrourus.** Grey Harrier.

Accipiter macrourus Gmel. N. Comm. Petrop. xv. 1771, p. 439, pls. viii. & ix.: Woronez, S. Russia.

a. ♀ ad. Lake Naivasha, 6700 ft. Dec. 3.

b. ♀ ad. Bakoro Country, 20 miles E. of Lobor Mt., 3600 ft. Feb. 3.

Total length in flesh: 19¼ & 19 inches. Wing: 357 & 349 mm.

Both are in good dress and a little worn.

The males of this species and of *C. pygargus* are quite different, but the females are very similar, and can be separated not only by the female of *C. macrourus* being somewhat larger and having somewhat shorter legs than the female of *C. pygargus*, but by the character given by Sharpe (Cat. Birds B. M. vol. i. 1874, p. 52) for distinguishing the females of this species from *C. pygargus*, which is as follows:—

The tips of the primary coverts do not extend beyond the notch on the *outer* web of the 2nd primary = *C. pygargus*.

The tips of the primary coverts extend beyond the notch on the *outer* web of the 2nd primary = *C. macrourus*.

[Irides brown, eyelids yellow; bill black; cere yellow or greenish yellow; legs and toes yellow. Stomach contained mice. Common.]

100. **Circus æruginosus.** Marsh Harrier.

Falco æruginosus, Linn. Syst. Nat. 12th ed. i. 1766, p. 130: Sweden.

a. ♂ juv. Lake Naivasha, 6700 ft. Dec. 4.

b. ♂ ad. Naam River, Lakwa, 3150 ft. Feb. 16.

Total length in flesh: ad. 21¼ inches; imm. 19 inches. Wing: ad. 400 mm.; imm. 370 mm. Weight of imm.: 1 lb.

The immature bird is apparently in first dress and is not worn. The other is apparently in adult dress and is also in fresh plumage. Judging by the size of specimen *b.* I should think it was probably a female though sexed as a male.

[*Ad.* Irides yellow; bill black; cere greyish yellow; legs and toes yellow. *Imm.* Irides brown; bill black; cere greenish yellow; legs and toes yellow. Tolerably common.]

101. **Melierax metabates.** Many-banded Goshawk.

Melierax metabates Heugl. Ibis, 1861, p. 72: Bahr-el-Abiad, *i. e.* White Nile.

a. ♀ ad. 15 miles S. of Baringo, 3800 ft. Dec. 26.
b. ♂ imm. Ngabotok, Turkwel River, 2200 ft. Jan. 10.
c. ♀ imm. Mt. Maroto, Maroto Stream, 3700 ft. Jan. 26.

Total length in flesh: ad. 20½ inches; imm. ♂ 20¼ inches, ♀ 19½ inches. Wing: ad. 334 mm.; imm. ♂ 307 mm., ♀ 319 mm.

The adult is in rather worn dress and is moulting. The immature male shows one adult feather on the breast, and the female one adult feather on the upper tail-coverts.

As pointed out by Reichenow (Vög. Afr. i. 1901, p. 545) and confirmed by myself, *M. polyzonus* Less. (Traité, 1831, p. 58: Cape of Good Hope) cannot stand for this species, and it must hereafter be known as *M. metabates* Heugl.

Falco (*Nisus*) *polyzonus* Rüpp. (Neue Wirb. Vög. 1835, p. 36, pl. 15: Dongola in Kordofan) is preoccupied by *Nisus polyzonos* Less.

The large series in the Museum Collection shows a large amount of individual variation, some examples from the same district being light and others quite dark.

[*Ad.* Irides brown; cere orange-red; bill black, whitish at base; legs and toes orange-red. *Imm.* Irides brown or dull yellow, cere dirty red; bill black, base bluish horn; legs and toes dirty orange. Common and generally distributed.]

102. **Melierax gabar.** Daudin's Goshawk.

Falco gabar Daud. Traité, vol. ii. 1800, p. 87: Swart Kop River, Camdeboo Berg (Compass Berg), N. of Graaf Reinet.

a. ♂ imm. Loita, 6300 ft. Oct. 4.
b. ♀ ad. Lake Naivasha, 6700 ft. Dec. 3.
c. ♀ ad. 40 miles N.W. of Baringo, 3400 ft. Jan. 1.

Total length in flesh: ad. 14½ & 14¼ inches; imm. 13 inches. Wing: ad. 196 & 193 mm.; imm. 183 mm.

The two adults are in black dress, which, as pointed out by A. L. Butler, Ibis, 1905, p. 369, and with which I agree, is nothing but a black phase of this species; therefore *M.* (*Sparvius*) *niger* Bonn. et Vieill. (Enc. Méth. iii. 1823, p. 1269: Senegal) must in future become a synonym.

Mr. Lowe's interesting field-notes also bear out this conclusion.

The December bird is in full moult, and the January one is in clean dress, though the wing and tail are a little worn.

The immature bird is assuming the adult feathering on the back and head.

[*Ad.* Irides brown or red-brown; bill black; cere black and orange or yellowish black; legs and toes orange, black in front or orange and black. *Imm.* Irides orange-yellow; bill black; cere orange; legs and toes orange-red. Stomach contained mice.

The female from Lake Naivasha, which is in the black phase, was undoubtedly paired to another in normal plumage, and I watched them together for some time before shooting the female. My experience seems to show that females are frequently black, whilst the males, on the other hand, are more frequently in normal dress.]

103. **Astur sphenurus.** Rüppell's Goshawk.

Falco (*Nisus*) *sphenurus* Rüpp. Neue Wirb. Vög. 1835, p. 42: Dabalak, nr. Massowah.

a. ♂ imm. 10 miles N.W. of Kerio River, 3600 ft. Jan. 5.

b, c. ♀ ad. & imm. Weiwei River, Rift Valley, 3100 ft. Jan. 7 & 9.

d, e. ♂ ad.; ♀ imm. Kittigom, Chua Dist., 2850 ft. Feb. 20 & 21.

Total length in flesh: ♂ 11 & 11½ inches; ♀ 12½ & 13¼ inches. Wing: ♂ ad. 177 mm., imm. 170 mm.; ♀ ad. 193 mm., imm. 196 & 184 mm.

Both the adults are in clean dress and just a little worn; the female is more broadly banded below than the male. All three of the immature birds are starting to assume the adult feathering.

[*Ad.* Irides red; bill black, bluish at base; cere yellow; eyelids yellow; leg and toes yellow. *Imm.* Similar, except irides yellow. Tolerably common. The adult female from the Weiwei River was shot whilst eating a dove. Stomach contained a lizard.]

104. **Accipiter minullus.** Little Sparrow-Hawk.

Falco minullus Daud. Traité, vol. ii. 1800, p. 88: Gamtoos River, Cape Colony.

a, b. ♂ ad., ♀ imm. S. Guaso Nyiro, 2900 ft. Nov. 23.

Total length in flesh: ♂ 9¼ inches; ♀ 11 inches. Wing: ♂ 140 mm.; ♀ 154 mm.

The male is in fresh new dress and the female is assuming the adult dress.

I have carefully examined and compared birds from east and south Africa, and cannot with the series before me see any constant difference in colour or size between them.

Certainly, in freshly moulted birds, some southern examples are darker than east African specimens, whilst others are equally as light; and when it comes to faded browner specimens I cannot distinguish between them.

Perhaps a much larger series may show that *A. m. tropicalis* Reichenow (J. f. O. 1898, p. 139: East Africa) is a valid subspecies, though Prof. Reichenow's rather comprehensive type-locality needs greater precision.

[*Ad.* Irides reddish yellow; bill black, cere yellow; legs and toes yellow. *Imm.* Irides rich yellow; cere greenish yellow. This pair were found together in thick bush.]

105. **Accipiter rufiventris.** African Sparrow-Hawk.

Accipiter rufiventris A. Smith, S. A. Q. Journ. 1830, pp. 231 & 392: Baviaans River, nr. Uniondale, Cape Colony.

a. ♂ ad. Kikuyu, 6000 ft. Sept. 22.

Total length in flesh: 14½ inches. Wing: 225 mm.

In quite good dress and agreeing well with specimens from southern Africa.

Though sexed a male, the large size of this specimen seems to point to it being a female.

[Irides bright yellow; bill, upper mandible dark horn at tip, slate at base, lower dark horn at tip, slate at base; cere yellow; legs and toes yellow, claws black.]

106. **Buteo augur.** Augur Buzzard.

Buteo augur Rüpp. Neue Wirb. Vög. 1835, p. 38, pl. xvi.: Abyssinia.

a. ♂ imm. Kijabe, 6300 ft. Sept. 24.
b. ♀ ad. Mau, 6900 ft. Sept. 30.
c, d. ♀ ad. & imm. Loita, 6600 ft. Oct. 5.

Total length in flesh: ♂ 21½ inches; ♀ 21¼ & 21 inches. Wing: ♂ 405 mm.; ♀ 438 & 431 mm. Weight of immature: 2½ lbs.

The forty specimens of this Buzzard now before me do not enlighten the bewildering plumage changes through which this bird appears to go. We have seven distinct plumages, some of which seem to have nothing to do with each other, so that it would almost appear that there is more than one species.

The seven dresses are as follows:—

(1) 1st dress (as shown by half-fledged nestling). General colour russet-brown, darker on back, lighter below, blobbed or streaked. Tail barred, sooty, or slightly chestnut.

(2) 2nd dress (as shown by specimens moulting from above). Black above, white below, throat black, tail chestnut.

These two stages seem obvious and clear, but beyond this point no progress seems possible.

The other five plumages are:—

(3) Apparently a first dress. General colour sooty-brown above and below. Tail sooty, barred or quite plain.

(4) Apparently an immature dress. Above black with some chestnut, throat and upper chest white with some black markings and somewhat washed with chestnut, rest of underparts pure chestnut; tail chestnut.

(5) Apparently an immature dress. Above and below blackish brown, with some chestnut markings; thighs, belly, and under tail-coverts buffy white; tail sooty, tinged with chestnut.

(6) A dress very close to No. 2, but with throat white.

(7) All black, tail chestnut.

I suggest that this species has two quite distinct phases, the adults of which are respectively No. 6 and No. 7, and that the sequence of plumage of both start and proceed each along their own lines as follows:—

Phase A. Sequence includes dress Nos. 1, 2, 6.

Phase B. ,, ,, ,, Nos. 3, 4, 5, 7.

A considerable series may show this to be right or to be utterly wrong, but I put it forward as a theory for future workers to unravel.

The four specimens in the collection are respectively:—

The females are each in the plumage No. 5, No. 6, and No. 7.

The male is almost in plumage No. 6, but there is some black on the throat and some chestnut on the upper parts.

In the Plate in Rüppell's Neue Wirb. Vög., fig. 1 is as described in dress No. 6, and fig. 2 is in the plumage of No. 7.

[Irides brown; bill black or bluish horn, fading to bluish at base; cere yellow; legs and toes yellow. Very common.]

107. **Buteo desertorum.** Rufous Buzzard.

Falco desertorum Daud. Traité, vol. ii. 1800, p. 162: Cape of Good Hope.

a. ♂ imm. Amala River, 5400 ft. Oct. 18.

Total length in flesh: 18½ inches. Wing 338 mm.

In good clean dress.

[Irides brown; bill black; cere yellow; legs and toes yellow. Common on the Amala River. Stomach contained locusts.]

108. **Aquila rapax.** Tawny Eagle.

Falco rapax Temm. Pl. Col. i. 1828, pl. 455: "Dans les forêts de la partie méridionale de l'Afrique" (Levaillant).

a. ♂ ad. W. of Mt. Leganisho, 5850 ft. Oct. 29.
b. ♂ imm. Lengototo, 6200 ft. Nov. 11.

Total length in flesh : ad. 28 inches; imm. 27¾ inches. Wing: ad. 518 mm.; imm. 530 mm. Weight of immature : 4½ lbs.

The adult is in good dress and not faded. The immature bird has some dark markings on both the upper and under surface.

The plate in Temminck's work represents a bird in first dress.

[*Ad.* Irides light brown; bill bluish horn, tip black, cere yellow; feet yellow. *Imm.* Irides brown ; bill bluish horn, cere yellow; feet pale yellow. Common almost everywhere.]

109. **Lophotriorchis lucani.** Lucan's Eagle.

Lophotriorchis lucani Sharpe & Bouv. Bul. soc. zool. Fr. 1877, p. 471 : Landana, Congo.

a. ♀ imm. Amala River, 5400 ft. Oct. 19.

Total length in flesh : 21¼ inches. Wing : 395 mm.

In clean and apparently first dress, having light tips to the feathers of the head, back, wings, and rump.

[Irides yellowish brown; cere greenish ; bill blue, tip black ; feet pale yellow. Appears to be scarce.]

110. **Spizaëtus bellicosus.** Martial Hawk Eagle.

Falco bellicosus Daud. Traité, vol. ii. 1800, p. 38 : Gt. Namaqualand—"entre le 28° Sud et le Tropique."

a. ♀ ad. Nginyan River, 30 miles N.W. of Baringo, 2800 ft. Dec. 31.

Total length in flesh : 33½ inches. Wing : 638 mm. Weight : 11 lbs.

In fine adult plumage.

[Irides yellow ; bill black ; cere grey; legs and toes bluish white. Several of these magnificent eagles were seen near the Narossura and Southern Guaso Nyiro Rivers. The one shot was busy devouring a Hyrax in a tree. It seemed quite unconcerned and allowed me to approach within 40 yards.]

111. **Lophoaëtus occipitalis.** African Crested Eagle.

Falco occipitalis Daud. Traité, vol. ii. 1800, p. 40: Pays d'Auteniquoi = Knysna Dist.

a. ♀ ad. Amala River, 5500 ft. Oct. 15.

Total length in flesh: 22⅛ inches. Wing 390 mm.

In good dress.

[Irides bright yellow; cere pale yellow; bill bluish horn, darker at tip; feet dirty yellow. Frequently seen, and usually perched on a tree or dead branch.]

112. **Circaëtus cinereus.** Brown Harrier Eagle.

Circaëtus cinereus Vieill. N. D. d'Hist. Nat. xxiii. 1818, p. 445: Senegal.

a. ♂ ad. Nr. Lake Hannington, 3700 ft. Dec. 25.

Total length in flesh: 26 inches. Wing 534 mm.

In clean dress and but slightly worn.

I have carefully examined the series in the British Museum, and agree with Sclater, *cf.* 'Ibis,' 1912, p. 9, Reichenow, Shelley, etc., that *C. cinereus* and *C. pectoralis* A. Smith (S. A. Quart. Journal, 1836, p. 109: South Africa) should be in future kept separate; and the character given by Mr. Sclater of the difference in size of the bill is quite constant throughout.

Immature birds also are separable as follows:—

C. cinereus. The feathers of the underparts white, with a broad brown tip and brown bars or markings carried up both webs to their base.

C. pectoralis. The feathers of the underparts white with broad blackish brown tips only.

The general appearance of *C. cinereus* below is wholly brown with some white markings, and of *C. pectoralis* wholly white with some brown markings, except the chest, which is brown.

A young bird in the Museum, from Kuruman, named *C. cinereus*, is really the young of *C. pectoralis*, and has the whole under surface cinnamon-brown, the throat being longitudinally streaked with blackish and the whole upper surface sandy, with darker centres to the feathers, lighter towards the head and darker towards the tail; the wing-feathers and tail are purplish brown, the latter being indistinctly barred.

No specimen of *C. cinereus* of the same age is available for comparison.

Sir A. Smith, under *C. pectoralis*, describes the young as "uniform light chestnut or a dull earthy-brown plumage." (*Cf.* S. A. Quart. Journal, 1830, p. 109, also footnote.) Is not this possibly the difference between the two species in their first plumage?

[Irides yellow; bill black, cere grey; legs and toes dirty white. Stomach contained remains of snake. Only two seen on the whole trip.]

113. **Terathopius ecaudatus.** Bateleur Eagle.

Falco ecaudatus Daud. Traité, vol. ii. 1800, p. 54: Pays d'Auteniquoi=Knysna Dist.

a. ♀ ad. Amala River, 5500 ft. Oct. 15.

b. ♀ juv. 30 miles N.W. of Baringo, 2800 ft. Dec. 31.

Total length in flesh: ad. $22\frac{1}{4}$ inches; juv. 23 inches. Wing: ad. 530 mm.; juv. 476 mm. Weight: 6 lbs.

The adult is a red-backed form in good clean dress. The young is in complete brown dress and very worn.

The three specimens in the Museum of *Helotarsus leuconotus* Rüpp. (Syst. Uebers. 1845, p. 10: Sennaar, ex Würt. MS.) respectively from Abyssinia (August), Bahr el Ghazal and Nyasaland (July), are curiously enough all worn birds, and their lighter mantle etc. may be due to fading.

In the 'Ibis,' 1912, p. 9, a note of mine, in regard to these races, is of interest, especially when it is remembered I was at Beira between Nov. 22 and Feb. 24.

A much larger series than is at present available is necessary before any definite decision can be come to.

Levaillant's plate represents clearly the red-backed form. *Cf.* Levaill. Ois. d'Afr. 1799, p. 31, pls. vii. & viii.

[*Ad.* Irides brown; bill yellow tipped with greenish horn; legs and toes pinkish yellow; cere bright red.

Juv. Irides brown: bill greenish horn, tip black; cere greenish grey; feet bluish white. Very common. During our whole trip I did not see a single specimen with a white back.]

114. **Milvus ægyptius parasitus.** Southern Egyptian Kite.

Falco parasitus Daud. Traité, vol. ii. 1800, p. 150: Cape Colony, *ex* Levaillant.

a, b. ♂ imm., ♀ ad. Amala River, 5600 & 5700 ft. Oct. 5 & 12.

Total length in flesh: ad. 22¼ inches: imm. 21 inches. Wing: ad. 431 mm; imm. 412 mm.

The adult agrees perfectly with specimens from south Africa. The immature bird is much browner and has a dark bill, though it is not in first dress.

The southern African birds are darker and smaller than northern African specimens, and I have therefore kept this race separate from the true *Milvus ægyptius* Gmelin (Syst. Nat. i. 1788, p. 261: Egypt).

Smith, in the S. A. Q. J. for 1830, p. 391, noticed the distinctness of this race and supported it; and recently this has been emphasized by Dr. Hartert (Bull. B. O. C. vol. xxxiii. 1914, p. 90).

[*Ad.* Irides brown; cere greenish yellow; bill yellow; legs and toes yellow. *Imm.* Irides brown; cere light yellow; bill dark horn, bluish at base; legs and toes yellow. Very common and bold. Occasionally sweeping down and carrying specimens from off the skinning table.]

115. **Elanus cæruleus.** Black-shouldered Kite.

Falco cæruleus Desf. Hist. de l'Acad. R. des Sc. Paris for 1787, 1789, p. 503, pl. xv.: Environs of Algiers.

a. ♀ ad. Kikuyu, 6000 ft. Sept. 23.

b. ♂ imm. Lengototo, 6000 ft. Nov. 8.

Total length in flesh: ad. 12 inches; imm. 12¼ inches. Wing: ad. 271 mm.; imm. 265 mm.

The adult is in moult and the immature bird is but slightly worn.

[*Ad.* Irides bright red: bill black; cere yellow; legs and toes yellow, claws black. *Imm.* Irides reddish yellow;

bill black; cere yellow; legs and toes yellow. Stomach contained remains of a rodent. Frequently seen during our journey in British E. Africa.]

116. **Poliohierax semitorquatus.** African Falconet.

Falco semitorquata A. Smith, Rep. Exp. 1836, p. 44: Old Latakoo, Bechuanaland.

a. ♀ ad. Akinyo River, Bakoro, 3600 ft. Feb. 2.

Total length in flesh: 7¾ inches. Wing: 119 mm.

In good clean dress.

[Irides brown; bill light blue, tip black; cere red; legs and toes red. Stomach contained remains of a lizard. This was the only specimen seen, and was found sitting on a solitary thorn-tree beside a dry water-course.]

117. **Falco cuvieri.** African Hobby.

Falco cuvieri A. Smith, S. A. Q. J. i. 1830, p. 392: Kei River, Eastern Cape Colony.

a. ♂ ad. Narossura, 7000 ft. Nov. 2.

Total length in flesh: 12 inches. Wing: 233 mm.

A rich dark-coloured specimen in fresh new dress, and just completing the moult.

Apparently a rare bird in collections.

[Irides dark brown; bill bluish horn; cere yellow; legs and toes yellow. Stomach contained insects. Several seen in British E. Africa, but always very shy.]

118. **Rhyncodon biarmicus biarmicus.** South African Lanner.

Falco biarmicus Temm. Pl. Col. i. 1825, pl. 324: Camdeboo Berg (Compass Berg), Cape Colony.

a. ♂ ad. Lake Naivasha, 6700 ft. Dec. 5.

Total length in flesh: 17 inches. Wing: 310 mm.

An immature specimen in good dress; it agrees in size with specimens from Cape Colony, which are apparently smaller than *F. b. tanypterus* Schl. (Abhandl. Geb. Zool. etc. 1841, p. 8, pls. 12 & 13: Nubia, *cf.* Rüpp. N. Wirb. 1835, p. 44), a subspecies that does not appear to be very well defined.

[Irides brown; bill blackish horn; cere light grey; legs and toes yellow. Only two seen.]

119. **Cerchneis tinnunculus carlo.** African Common Kestrel.

Cerchneis tinnunculus carlo Hart. & Neum. Journ. für Ornith. 1907, p. 592: Bussidimo, nr. Harar, Abyssinia.

a. ♀ ad. Lengototo, 6000 ft. Nov. 7.

b. ♂ imm. Narossura, 5000 ft. Nov. 17.

c. ♀ ad. Akinyo River, Bakoro, 3600 ft. Feb. 2.

d. ♂ juv. E. slopes of Nakwai Hills, 3600 ft. Nov. 8.

Total length in flesh: ♂ 13¾ & 12¼ inches; ♀ 14¼ & 14⅛ inches. Wing: ♂ 238 & 227 mm.; ♀ 257 & 254 mm.

Quite a good and sound race, being always darker and much more clearly marked below than *C. t. tinnunculus* (Linn. Syst. Nat. 10th ed. 1758, p. 90: Sweden).

Both the females are adult, in worn plumage, and one has new feathering appearing on the mantle. The young male is assuming adult feathering on the breast, mantle, and rump. The other male is not quite fully adult, having dark bands across the tail.

Hartert and Neumann, in their description, point out that the figures of *C. t. arthuri* in the J. f. O. 1904, pl. xvi., represent this subspecies and have nothing to do with the true *C. arthuri*; this is quite correct.

[♂ ♀. Irides brown; bill bluish horn; cere yellow; legs and toes yellow. Stomach contained mice, lizards, grasshoppers, and locusts. Not common in the Nakwai Hills.]

120. **Cerchneis rupicoloides arthuri.** Buxton's Kestrel.

Tinnunculus arthuri Gurney, List of Diurn. B. of Prey, 1884, p. 156: Mombasa.

a. ♂ ad. Mt. Suswa. Sept. 26.

Total length in flesh: 12⅛ inches. Wing: 246 mm.

In good dress and but slightly worn.

This race of *C. r. rupicoloides* Smith (S. A. Q. J. 1830, p. 238: Groene River, Namaqualand), from which it differs in being larger, is equal in size to *C. r. fieldi* Elliot (Publ. Field Mus., Orn. i. pt. ii. 1897, p. 58: Silo Plain, Somaliland), but differs from that race in being always darker.

[Irides white; bill bluish horn, yellowish at base; cere yellow; legs and toes yellow. I had just shot a specimen of *Bubo lacteus* which lodged in the top of a tree, and as it was not quite dead it attracted a pair of these Kestrels. They were the only two of this species seen about whose identification I can be certain.]

121. **Cerchneis naumanni.** Lesser Kestrel.

Falco naumanni E. Fleischer, Sylvan, ein Jahrbuch für Forstmänner, Jäger und Jagdfreunde, von C. P. Laurop und V. F. Fischer; Marburg und Cassel, bëij Joh. Chr. Kreiger, 1818, Part v. Art. 10, p. 174: Germany.

a. ♀ ad. Narossura, 5000 ft. Nov. 16.

b. ♂ imm. Loita, 6300 ft. Nov. 27.

Total length in flesh: ♂ 12 inches; ♀ 12⅛ inches. Wing: ♂ 229 imm.; ♀ 231 mm.

The male is assuming the adult feathering. The female is in good clean dress and but very slightly worn.

The part of the work 'Sylvan' examined by me at the British Museum in which the description of this Kestrel is found is bound in a volume dated on the outside 1817–1819. Fleischer's paper is dated 1817 at Leipzig, and is entitled "Zwei neue Falken," and comes in that part of the volume covered by the year 1818.

There is a reprint of this rare paper in the Orn. Monatsberichte, 1898, pp. 142–144, by Prof. Reichenow, and an interesting letter from Dresser in the 'Ibis,' 1875, p. 515, on the same subject.

[♂. Irides brown; bill bluish horn, base yellowish; cere yellow; legs and toes yellow, claws white. ♀. Similar. except cere orange-yellow. Stomach contained locusts. A large number of Kestrels were seen, apparently of this species.]

122. **Bubo bubo ascalaphus.** Egyptian Spotted Eagle Owl.

Bubo ascalaphus Sav. Descript. de l'Égypte, 1810, p. 295, pl. iii.: Egypt.

a. ♀ ad. Loita, 6600 ft. Oct. 5.

Total length in flesh: 19½ inches. Wing: 353 mm. Weight 2¼ lbs.

In somewhat worn dress.

Savigny's figure of this Owl shows a bird with plain buffy legs and thighs, and with very narrow bands on the underside of the tail, otherwise it agrees perfectly with the majority of specimens of this species.

Both *B. a. barbarus* and *B. a. desertorum* were described from northern Tunisia and Algeria and southern Tunisia and Algeria respectively, *cf.* Erlanger, O. M. 1897, p. 192; and *B. a. trothæ* Reichw. O. M. xiv. 1906, p. 10, was described from German S.W. Africa, but Prof. Neumann has shown in the J. f. O. 1914, p. 36, that *B. a. trothæ* Reichw. has nothing to do with *B. ascalaphus* and is a colour form of *B. maculosus.*

[Irides yellow; bill black; feet greyish black. Nesting. Appears to be common. The oviduct of the specimen obtained contained an egg.]

123. **Bubo africanus cinerascens.** Greyish-spotted Eagle Owl.

Bubo cinerascens Guér. Rev. Zool. 1843, p. 321: Abyssinia.

a. ♀ ad. Hills N. of Maroto, 3900 feet. Jan. 24.

Total length in flesh: 17½ inches. Wing: 310 mm.

In somewhat worn dress.

As shown by Prof. Neumann "*maculosus*" must give place to "*africanus*" of Temm., *cf.* J. f. O. 1914, pp. 37 & 38.

Asio maculosus americanus Oberh. (Proc. U.S. Nat. Mus. Wash. 1905, p. 856: Kilimanjaro) appears to be a synonym of *B. a. cinerascens.*

[Irides very dark brown, eyelids pink flesh; bill black; feet dark plumbeous. Two of these Owls were found perched in a Euphorbia tree.]

124. **Bubo lacteus.** Verreaux's Eagle Owl.

Strix lactea Temm. Pl. Col. ii. 1820, pl. iv.: Senegal.

a. ♂ ad. Mt. Suswa. Sept. 26.

b. ♂ ad. Lake Naivasha, 5700 ft. Dec. 4.

c. ♂ ad. Rift Valley, 30 miles N.W. of Baringo, 2800 ft. Dec. 29.

d. ♂ ad. Turkwel River. Jan. 15.

e. ♂ ad. Akinyo River, Bakoro, 3600 ft. Feb. 2.

f, g. ♂ ♀ juv. Kamchuru, Lobor, 3200 ft. Feb. 12.

Total length in flesh: ad. 25–22½ inches; young 14 and 13 inches. Wing of adults: 450–420 mm. Weight 3½ lbs.

All the adults are rather worn, except the one from Akinyo River, which, being much browner above, is probably a bird of the year.

The two nestlings are assuming full feathering, which is distinctly brown above.

The plate in the Pl. Col. shows a very brown-backed bird this was probably taken from a bird of the year, and I expect some latitude must be allowed for the clear coloration of the upper parts.

[Irides brown, eyelids black; bill bluish horn; feet greyish flesh-colour, dark brown, blue grey, dirty grey, or bluish. Young have eyelids brown; bill black, tip of lower mandible whitish; feet plumbeous. Stomach contained mice.]

125. **Otus capensis.** Cape Scops Owl.

Scops capensis A. Smith, S. A. Q. J. ii. 1834, p. 314: South Africa.

a, b. ♂ ad. Nakwai Hills, 3800 & 3900 ft. Feb. 6.

Total length in flesh: 7½ & 7¼ inches. Wing: 138 & 137 mm.

Both are in good clean normal plumage, and agree perfectly with specimens from South Africa.

There appear to be three phases of plumage of this bird: 1st, grey, that which might be designated as the normal; 2nd, a rufous phase (*cf.* Sclater, Ibis, 1912, p. 5); and 3rd, a slaty-grey phase.

Messrs. Gunning & Roberts, in the Ann. Transvaal Museum, vol. iii. 1911, p. 111, describe three new subspecies of this Owl as follows:—

Pisorhina capensis intermedia: Modderfontein, Transvaal.
,, ,, *grisea*: Bethulie, Orange Free State.
,, ,, *pusilla*: Boror, Portuguese E. Africa.

The series in the National collection shows that great individual variation occurs in this little Owl, and I cannot see any constant character sufficiently well marked to warrant separation into races, and therefore, without more convincing proof, I must place Gunning & Roberts' names as synonyms.

The other named races of this Owl are :—*Pisorhina c. ugandæ* Neum. J. f. O. 1899, p. 56 : North Uganda ; *P. c. leucopsis* Hartl. Rev. Zool. 1849, p. 496 : Island of San Thomé ; *P. c. icterorhyncha* Shelley, Ibis, 1873, p. 138 : Fantee, Gold Coast ; and *P. c. scapulata* Boc. Jorn. Lisboa, xlviii. 1888, p. 229 : Angola.

[Irides yellow or dull yellow ; bill blackish horn, tip of lower mandible yellow, or upper half of culmen and lower half of lower mandible light yellow ; feet dirty grey. Heard at nearly all our camps.]

126. **Otus leucotis leucotis.** White-faced Scops Owl.

Strix leucotis Temm. Pl. Col. vol. ii. 1824, pl. xvi. : Senegal.

a. ♂ ad. Nakwai Hills, 3500 ft. Feb. 7.

Total length in flesh: $10\frac{1}{4}$ inches. Wing : 188 mm.

In worn dress and having a very distinct black patch on the head.

[Irides rich yellow ; bill greenish horn ; feet dirty grey. Stomach contained mice. This was the only specimen seen, and was perched in a stunted thorn-tree.]

In the 'Ibis' for 1906, p. 660, Mr. Ogilvie-Grant says that Erlanger renamed the typical form, which statement is not quite correct, and at the same time Mr. Grant gives a new name to the southern race.

I have carefully examined the series in the National collection and agree with Mr. Grant that two races certainly exist, and I am by no means sure that a third will not have to be recognised.

The races are as follows :—

Otus leucotis leucotis Temm. : Senegal. Represented in the Museum by specimens from Gambia.

Range. Gambia, Sierra Leone, Nigeria, White Nile, Khartoum to Somaliland, and British East Africa.

Birds from Khartoum and Somaliland are somewhat different from those from Gambia, especially in the young bird, and a larger series may show that this form is distinct. If this is so it would bear the name *O. l. nigrovertex* Erl. (J. f. O. 1904, p. 233 : Gambo, Abyssinia).

OTUS LEUCOTIS GRANTI.

Pisorhina leucotis granti Kollibay, Orn. Monatsb. 1910, p. 148 : South-west Africa.

Range. Damaraland and Angola, east to the Transvaal, Natal, and Nyasaland.

As shown by Kollibay, op. cit., the name *Scops erlangeri* O. Grant (Ibis, 1906, p. 660 : Nyasaland) is preoccupied by *Pisorhina scops erlangeri* Tschusi (Orn. Jahrb. 1904, p. 101 : Tallah, Tunisia), though he is not correct in stating that Mr. Grant described his bird from south-west Africa.

The single Angola bird before me is somewhat paler than more southern specimens, and should a large series show this character to be constant, it would perhaps need separating.

127. **Strix woodfordi.** Woodford's Brown Owl.

Noctua woodfordi A. Smith, S. A. Q. Journal, ii. 1834, p. 312 : South Africa.

a. ♂. Mt. Maroto, 4300 ft. Jan. 30.

Total length in flesh : 14 inches. Wing : 249 mm.

In good fresh plumage and in the cinnamon phase.

I have carefully examined all the specimens of this Owl and have come to the conclusion that only one race exists, and that the characters pointed out for the supposed races are merely individual. It is a very variable species, and there appears to be at least two or three phases, *i. e.* a blackish, a cinnamon, and a greyish.

In one specimen from Ugogo in the Museum collection two phases occur on the same bird, the head and part of the mantle being blackish and the rest of the plumage being cinnamon.

I at first thought that the cinnamon phase represented the young and the blackish the full adult (as, I believe, is the case in the European Brown Owl, where the paler, less dark, birds are the young of the year), but a young bird from British E. Africa, still in downy dress, is assuming a blackish plumage.

It would, however, appear that the first dress (*i. e.* that in which the young leave the nest) is always pale and rufous; though the feathering being very soft and downy precludes it being confounded with more adult birds.

The named races of this Owl are as follows:—

Surnium umbrinum Heugl. J. f. O. 1863, p. 12: Begemeder, Abyssinia.

Syrnium nigricantius Sharpe, Ibis, 1897, p. 449: Mpapwa, German East Africa.

Syrnium woodfordi var. *suahelicum* Rchw. Werth. Mitth. Hochl. 1898, p. 272: German East Africa.

Syrnium woodfordi var. *sansibaricum* Rchw. op. cit.: Zansibar.

[Irides brown, eyelids light brown: bill yellow; feet yellow. Stomach contained insects. Only two were seen, in the thick bush along a small stream.]

128. **Glaucidium perlatum.** African Pearl-spotted Owlet.

Strix perlata Vieill. N. D. d'Hist. Nat. vol. vii. p. 26: Senegal.

a. ♀. Kito, 60 miles N.W. of Baringo, 4100 ft. Jan. 2.
b. ♂. Kerio River, 3400 ft. Jan. 5.
c. ♂. 10 miles N.W. of Kerio River, 3600 ft. Jan. 5.
d. ♂. Weiwei River, Rift Valley, 3100 ft. Jan. 7.
e. ♀. Nakwai Hills, 3900 ft. Feb. 6.

Total length in flesh: ♂ 8¼ & 8 inches; ♀ 8½ & 7¾ inches. Wing: ♂ 111–107 mm.; ♀ 107 mm.

At the first glance at the series of this Owl in the Museum collection there appears to be more than one form, but when they are laid out in their localities it becomes at once apparent that no stress can be laid upon any particular character which might warrant separation.

The two most striking plumages are that which is fully spotted and that which is practically plain on the upper parts.

These two apparently dissimilar dresses can either be put down to colour phases, or to immature and adult plumages.

The first theory is at once disposed of by the fact that every gradation between the two is found, *i.e.* specimens with spotted heads and plain mantles, specimens with almost plain heads and spotted mantles, and almost every stage between. The second theory is perhaps more feasible, but among the series I cannot place my hand on one specimen that is just out of the nest; though there are two from Nyasaland on which the note is written "taken as nestlings and kept 5 months." These two have brown heads with but very few and very narrow streaks, and the mantle is but slightly spotted.

Taking this as the first dress, we have a single specimen from Makalaka that is just completing the moult, in which the new mantle is normally spotted and the feathers of the head are still brown (as in the two Nyasaland specimens), and new *spotted* feathers are replacing them.

Therefore this seems to point to the plainer birds being young and the spotted ones being adult.

This theory seems correct until we come to specimens that have the markings on the head more barred than spotted. Is this individual variation?

North-western, north-eastern, and eastern birds in what I take to be adult dress have the spots on the head rather smaller than southern specimens, but many individuals can be found that are hardly distinguishable.

Of the five specimens in this collection two are apparently young and the other three are apparently adult, though one has less spotting on the mantle than the other two.

A series of almost fully fledged nestlings taken from the nest would be of great value in settling the question of plumage.

Reichenow has himself (Vögel Afr. i. p. 674) suppressed his *G. kilimense* (Orn. Monatsb. 1893, p. 178: Kilimanjaro).

[Irides yellow or light yellow; bill greenish yellow or greenish horn; cere dark green; feet yellow, greenish yellow, or dirty yellow. Tolerably common wherever found.]

129. **Tyto alba affinis.** South African Barn-Owl.

Strix affinis Layard, Birds of S. Afr. 1867, p. 43: Cape of Good Hope.

a, b. ♂ ad. Annamuget, Bakoro, 3700 ft. Feb. 1.

c. ♀ ad. 20 miles East of Lobor Hills, 3600 ft. Feb. 3.

Total length in flesh: ♂ 14 & 12$\frac{3}{4}$ inches; ♀ 14 inches. Wing: ♂ 292 & 282 mm.; ♀ 294 mm.

All are in good dress.

The African race of the Barn-Owl should certainly be kept separate and is a very distinct form.

The name *Strix maculata* Brehm (Naumannia, 1858, p. 220: N.E. Africa; id. 1855, p. 270) is preoccupied by *Strix maculata* Vieill. (N. D. d'Hist. Nat. vii. 1817, p. 45: Paraguay).

[Irides brown; bill white, base flesh-colour; feet dirty white or dirty flesh. Appears to be local. One of the three specimens was caught by a porter, who climbed a tree and seized it whilst asleep.]

130. **Poicephalus meyeri saturatus.** Sharpe's East African Parrot.

Poicephalus saturatus Sharpe, Bull. B. O. C. vol. xi. 1901, p. 67: N. Ankole, Uganda.

a. ♂ ad. Amala River, 5500 ft. Oct. 15.

b. ♂ ad. 40 miles N.W. of Baringo, 3400 ft. Jan. 1.

c. ♀ ad. Mt. Maroto, 3700 ft. Jan. 25.

d. ♂ ad. Payera Dist., 3000 ft. Feb. 19.

Total length in flesh: ♂ 9, 9$\frac{1}{8}$, & 9$\frac{1}{4}$ inches; ♀ 9$\frac{1}{2}$ inches. Wing: ♂ 154–149 mm.; ♀ 150 mm.

One of the January birds is in new dress, the others are a little worn, and both the October and January birds are moulting.

[Irides red; bill very dark horn, blackish, or blackish-horn; legs and toes dark grey or dark brown. Fairly plentiful wherever found.]

In naming these specimens I have had to examine the whole series in the British Museum, and have come to the following conclusions as regards the races:—

POICEPHALUS MEYERI MEYERI.

Psittacus meyeri Cretz. Atlas, 1826, p. 18, pl. xi.: Kordofan.

Of this, *Phæocephalus xanthopterus* Heuglin (J. f. O. 1863, p. 271: between Djur and Kosanga, Bahr el Ghazal), *Poicephalus meyeri erythreæ* Neum. (Orn. Monatsb. 1899, p. 25: Anseba River, Bogosland) and *P. m. abessinicus* Zedl. (Orn. Monatsb. 1908, p. 174: S. Erythrea), are synonyms.

Above earthy washed with green, rump washed with blue.

Range. Bahr el Ghazal, Kordofan, and Abyssinia.

POICEPHALUS MEYERI MATSCHIEI.

Poicephalus matschiei Neum. Journ. für Orn. 1898, p. 501: Ugogo, German E. Africa.

Very similar to *P. m. meyeri*, perhaps rather darker above and blue on rump brighter.

Range. German East Africa and Nyasaland.

POICEPHALUS MEYERI DAMARENSIS.

Poicephalus damarensis Neum. op. cit.: Ochimbora, Damaraland.

Rather pale earthy above, blue rump, no yellow band on head.

Range. Damaraland to Lake Ngami.

POICEPHALUS MEYERI REICHENOWI.

Poicephalus reichenowi Neum. op. cit.: Malange, North Angola.

Large race, blue rump, no yellow band on head.

Range. Angola, and probably western basin of Congo.

POICEPHALUS MEYERI TRANSVAALENSIS.

Poicephalus meyeri transvaalensis Neum. Orn. Monatsb. 1899, p. 25: Transvaal.

Above earthy without green wash, rump bluish, below on the average more blue than green.

Range. Transvaal, Matabeleland, Mashonaland, East Bechuanaland, Tete on the Zambesi.

POICEPHALUS MEYERI SATURATUS.

Pœocephalus saturatus Sharpe, Bull. B. O. C. vol. xi. 1901, p. 67 : N. Ankole.

Of this, *P. m. virescens* Reichw. (Vög. Afr. ii. 1902, p. 12 : Kavirondo), and *P. m. nyansæ* Neum. (Nov. Zool. 1908, p. 383 : Unyoro, Uganda) are synonyms.

A dark race, below and rump on the average green.

Range. Uganda, British East Africa, and Ruwenzori.

POICEPHALUS MEYERI NEAVEI.

Poicephalus meyeri neavei C. Grant, Bull. B. O. C. vol. xxxv. 1914, p. 19 : Kaluli Valley, Belgian Congo.

"Most nearly allied to *P. m. saturatus* Sharpe, but generally darker throughout, on the average bluer below, and having the blue rump of *P. m. damarensis*."

Type. ♀ ad. Kaluli Valley, Belgian Congo. Collected on the 27th of April, 1907, by S. A. Neave. Wing 155 mm.

Named in honour of Mr. S. A. Neave.

Range. Eastern Belgian Congo and northern Rhodesia to Angoniland.

Though these Parrots vary to a considerable amount individually and no single character of a single specimen can be fixed down, yet when examined collectively and the series laid out geographically, average differences exist which preclude all these Parrots being placed under one name. Therefore six of the described races are recognisable, and (perhaps unfortunately) I have been compelled to describe a seventh.

131. **Agapornis pullarius.** North African Love-Bird.

Psittacus pullarius Linn. Syst. Nat. 10th ed. 1758, p. 102 : Æthiopia = Nubia.

a. ♂ ad. Payera Dist., 3000 ft. Feb. 19.

Total length in flesh : 6⅛ inches. Wing : 89 mm.

In worn and rather faded dress and in moult.

[Irides brown ; bill : upper mandible red, lower whitish ; legs and toes dirty grey. Several seen amongst the bamboo.]

Eastern and western specimens agree in size and coloration, except that the majority of the adults from the latter locality have a more decided green wash on the inner webs of the flight-feathers on their underside. This character is found in young birds from both places and can be traced in east African adults, though the majority of these have more blackish inner webs.

A. p. ugandæ Neumann (Nov. Zool. vol. xv. 1908, p. 38: Entebbe) does not appear to differ from northern birds. Unfortunately, Neumann did not compare his specimens with Nubian birds, but with western ones. Western specimens are certainly somewhat different from eastern ones, both in the way I have pointed out and in the darker blue rump of some of the western specimens, but at present I do not consider the evidence sufficient to warrant naming a new race.

132. **Coracias abyssinus abyssinus.** Abyssinian Roller.

Coracias abyssinus Bodd. Tabl. Pl. Enl. 1783, p. 38: Abyssinia; *cf.* D'Aub. Pl. Enl. vol. iii. 1774, p. 175, pl. 626.

a, b. ♂ ♀ ad. Turkwel River, 1900 ft. Jan. 14.

c. ♀ ad. Nakwai Hills, 3600 ft. Feb. 8.

Total length in flesh: ♂ 16¼ inches; ♀ 16¾ & 15¼ inches. Wing: ♂ 155 mm.; ♀ 160 & 153 mm.

All are in good dress and a little worn.

[Irides brown; bill black; legs and toes dirty yellow or dirty greenish yellow. A good many seen, but not plentiful.]

133. **Coracias caudatus caudatus.** Lilac-breasted Roller.

Coracias caudata Linn. Syst. Nat. 12th ed. i. 1766, p. 160: Angola.

a. ♂ ad. Mau, 7000 ft. Sept. 30.

Total length in flesh: 15¼ inches. Wing: 170 mm.

In good dress and just a little worn.

[Irides light brown; bill black; legs and toes dirty greenish yellow.]

In naming this bird I have carefully compared and examined all the Rollers from southern, eastern, and western Africa, and cannot see any characters which warrants separation into races, except in the case of the quite distinct *C. c. lorti* Shelley (Ibis, 1885, p. 399 : Somaliland) ; therefore *C. c. suahelicus* Hart. & Neum. (Journ. für Orn. 1907, p. 593 : Usagara, G. E. Africa) becomes a synonym, as none of the characters given by the authors appear to hold good.

In the Journ. für Orn. 1905, p. 459, Erlanger suggests that further material may possibly prove that *C. abyssinus* and its subspecies should be considered subspecies of *C. c. caudatus*. This, however, would completely defeat the common sense idea of subspecies, seeing that both *C. c. caudatus* and *C. a. abyssinus* are found together and cannot therefore become geographical races of each other.

134. **Coracias nævia nævia.** White-naped Roller.

Coracias nævia Daud. Traité, vol. ii. 1800, p. 258: Senegal.

a. ♀ ad. Kijabe, 6400 ft. Sept. 24.

b. ♂ ad. Mt. Maroto, Maroto Stream. Jan. 26.

Total length in flesh : ♂ 14¾ inches ; ♀ 14¼ inches. Wing : ♂ 194 mm. ; ♀ 179 mm.

Both in good dress and but little worn.

[Irides brown ; bill black ; legs and toes dirty yellow. Several seen.]

In naming this bird I have examined the whole series in the British Museum, and have come to the conclusion that only two races exist of this Roller, as follows :—

CORACIAS NÆVIA NÆVIA Daud. op. cit.

Of this, besides the four names quoted by Dresser, Ibis, 1890, p. 385, *C. n. sharpei* Rchw. (Orn. Monatsb. 1899, p. 192 : Ussandani, G. E. A.) becomes a synonym.

Top of the head lilac ; below brownish lilac.

Range. Senegal, Gambia, Gold Coast, Abyssinia, Somaliland, Sudan, Uganda, B. E. Africa, G. E. Africa.

CORACIAS NÆVIA MOSAMBICUS Dresser.

Coracias mosambicus Dresser, Ibis, 1890, p. 386 : Mozambique.

Of this, *C. olivaceiceps* Sharpe (Cat. Birds, vol. xvii. 1892, p. 25 : South Africa) becomes a synonym.

Top of head green ; below washed with purple.

Range. Portuguese E. Africa, Rhodesia, Transvaal, Orange River Colony, Bechuanaland, Damaraland, and Angola.

It is of interest to note that the young bird of one race is not distinguishable from the young bird of the other race, and both have the top of the head green.

Two apparently adult specimens from Gambia and one from British E. Africa have a wash of green on the top of the head.

In the adults of *C. n. mosambicus* the lilac of the head fades to a brownish tone, and worn birds, if compared with freshly moulted specimens, appear at first sight to belong to different races.

135. **Corythornis cristata.** Malachite-crested Kingfisher.

Alcedo cristata Vroeg, Cat. Adumb. 1764, No. 55 : Cape of Good Hope.

This name preoccupies *Alcedo cristata* Linn. (Syst. Nat. 12th ed. i. 1766, p. 178 : India) and antedates *Alcedo cyanostigma* Rüpp. (Neue Wirb. Vög. 1835, p. 70, pl. xxiv. : Zana See, Abyssinia), which latter would, however, be available, should the northern bird prove to be a different race.

a. ♀ ad. Amala River, 5300 ft. Oct. 23.

b. ♀ ad. Lakwa, Naam River, 3100 ft. Feb. 16.

Total length in flesh : $5\frac{3}{4}$ & $5\frac{1}{2}$ inches. Wing : 57 & 55 mm.

Both are somewhat worn and faded.

[Irides brown ; bill red ; legs and toes red. Stomach contained aquatic beetles.]

I have recently spent some time carefully examining Linnæus' original copy of Vroeg's Catalogue in the Linnean Society's library, and have come to the conclusion that it is as good a scientific production as Lichtenstein's Catalogue, or the quite anonymous "Tunstall's" Orn. Brit., and must therefore be accepted.

In the Smiths. Misc. Coll. vol. xlvii. 1905, pp. 332–347, Messrs. Sherborn & Richmond have given partial reprints and discussed the position of the names, but neither have quoted the Dutch descriptions, which, when used in conjunction with the latin descriptions, greatly help to elucidate each named species.

I have not gone into all the definitions of the names as given by Richmond, but find that he is certainly right in the two so far used in my present paper.

In support of the use of these two names, I give the Dutch descriptions of each; the Latin ones can be found in the afore-mentioned paper by Sherborn.

"280. Klein Duikertje (*Ruficollis*) Lin. Sp. O. Is zeer zeldzaam in onze Meiren.

281. Idem't Wyfje (*Præcedentis Femina*). Is nog kleinder en ligter van koleur."

Colymbus ruficollis has been supported by me in the 'Ibis,' 1915, p. 49, under *Poliocephalus ruficollis capensis*.

"55. Kleine Gekuifde Ysvogel (*Cristata*) Lin. Sp. O. Deze soort verschilt weinig in kleur met ons Inlandich, doch de sierlyke achter over hangende kuif, en ontrend de helft kleinder zynde, maakt een kennelyk onderschied. Deszelfs woonplaats is Cabo de goede Hoop, hy is noch raarder dan de vorige."

The latter remark refers to *Alcedo ænea* Vroeg.

I am not sure that confusion may not be eliminated by giving the authority as "Vroeg" and not "Pallas in Vroeg," seeing that the former name is clearly printed on the cover of the Catalogue, and moreover it is stated that Vroeg is responsible for the arrangement of the collection, and therefore why not the nomenclature?

136. **Ispidina picta.** North African Pigmy Kingfisher.

Todus pictus Bodd. Tabl. Pl. Enl. 1783, p. 49: "Juida," Africa; *cf.* D'Aub. Pl. Enl. vol. viii. pl. 783.

a. ♀ ad. 20 miles S. of Baringo, 3800 ft. Dec. 24.

Total length in flesh: 4½ inches. Wing: 51 mm.

In fresh new dress.

[Irides brown; bill red, tip blackish; legs and toes red.]

137. **Halcyon leucocephala leucocephala.** Senegal White-headed Kingfisher.

Alcedo leucocephala P. L. S. Müller, Linn. Nat. Syst. Suppl. 1776, p. 94: Senegal.

a. ♂ ad. Loita, 6300 ft. Oct. 5.
b. ♀ ad. Narossura River, 5000 ft. Nov. 12.
c. ♀ ad. Nr. Lake Hannington. Dec. 25.

Total length in flesh: ♂ 8 inches; ♀ 9 & 8¾ inches. Wing: ♂ 102 mm.; ♀ 107 & 103 mm.

All are in good dress and only a little worn.

The two females are not so black on the mantle, and the blue of the wings and tail is slightly more greenish than in the male.

[Irides brown; bill red; legs and toes red.]

In naming these birds I have examined the whole series of this Kingfisher in the National Collection, and I have come to the following conclusions in regard to the races:—

HALCYON LEUCOCEPHALA LEUCOCEPHALA P. L. S. Müll. op. cit.

Of this, *H. l. centralis* Neum. (Journ. für Orn. 1905, p. 189: Bussissi, Victoria Nyanza) becomes a synonym, as also *Halcyon rufiventer* Sw. (Birds W. Afr. vol. ii. 1837, p. 101: Senegal).

Belly dark; wings and tail pure cobalt.

Female darker on the head, blue more greenish than in the male.

Range. Senegal, south to Cameroon, east to N.E. and E. Africa, south to German East Africa. There are in the Museum four specimens from Ruwenzori, where it evidently overlaps *H. l. ogilviei.*

HALCYON LEUCOCEPHALA SEMICÆRULEA.

Alcedo semicærulea Gmel. Syst. Nat. i. 1788, p. 457: Yemen, Arabia.

Belly dark, wings and tail cobalt washed with violet.

There is no apparent difference in the sexes.

Range. Confined to Arabia.

Alcedo semicærulea Forskål, Descr. Anim. 1775, p. 2, cannot be accepted as the first description, as none of these names are truly binomial.

HALCYON LEUCOCEPHALA ACTEON.

Dacelo acteon Less. Traité, 1831, p. 247 : "iles du Cap Vert (San Yago)" : *cf.* Pucheran, Rev. et Mag. Zool. 1853, p. 392.

Of this, *Halcyon erythrorhynchus* Gould (P. Z. S. 1837, p. 22 : St. Jago, Cape Verde) becomes a synonym, as shown both by Pucheran and Hartlaub, Journ. für Orn. 1855, p. 423.

Confined to the Cape Verde Islands and differs from *H. l. leucocephala* in being slightly larger and having the head and neck whiter.

HALCYON LEUCOCEPHALA SWAINSONI.

Halcyon swainsoni A. Smith, S. A. Q. Journ. 1834, p. 143 : Interior of South Africa.

Of this, *Halcyon pallidiventris* Cab. (Journ. für Orn. 1880, p. 349 : Angola) becomes a synonym.

Belly and under wing-coverts pale ; wings and tail almost pure violet.

Range. South Africa (Transvaal, Portuguese E. Africa and Rhodesia to the Zambesi ; west to Angola).

HALCYON LEUCOCEPHALA HYACINTHINA.

H. semicærulea hyacinthina Reichw. Journ. für Orn. 1900, p. 249 : Zanzibar.

I have not been able to examine any specimens from Zanzibar.

HALCYON LEUCOCEPHALA OGILVIEI.

Halcyon leucocephala ogilviei C. Grant, Bull. B. O. C. vol. xxxv. 1914, p. 28 : South Angoniland.

Differs from *H. l. leucocephala* in having the wings and tail coloured as in *H. l. swainsoni*, and from the latter in having the belly and under wing-coverts almost as dark as *H. l. leucocephala.*

Type. ♀ ad. S. Angoniland, Nyasaland. Collected in October, 1900, by Lt.-Col. Manning.

This race forms a link between *H. l. swainsoni* and *H. l. leucocephala.* The sexes do not differ.

Range. Nyasaland, through the lake districts to Ruwenzori. Two specimens from Ruwenzori in the British Museum collection.

138. **Halcyon senegalensis cyanoleuca.** Angola Kingfisher.

Alcedo cyanoleuca Vieill. N. D. d'Hist. Nat. vol. xix. 1818, p. 401 : Angola.

a. ♂ ad. Amala River, 5300 ft. Oct. 23.

In fresh new plumage, the wings being still in moult, and having the top of the head washed with blue.

Total length in flesh : 9½ inches. Wing : 106 mm.

[Irides brown ; bill : upper mandible red, lower black ; legs and toes black. Stomach contained fish and frogs.]

In naming this specimen I have had to examine the whole series of this Kingfisher in the National Collection, and I have come to the conclusion that this race and *H. s. senegalensis* occur together at least for part of their range, but until a larger series of carefully sexed specimens is available, and especially of young birds from the nest with the actual parents belonging to them, no definite conclusion can be come to.

Since the publication of my description of *H. s. superflua* (Bull. B. O. C. xxxv. 1914, p. 28) Mr. Ogilvie-Grant has kindly pointed out to me that Vieillot, in his original description, gives "la *tête*, le dessus du cou, le dos, les ailes et la queue sont d'un bleu d'aigue-marine," and that, therefore, this new subspecies must become a synonym of "*cyanoleuca*" : with this conclusion I am inclined to agree.

The evidence before me points to the one race being confined to the south and extending into east Africa, and the other confined to the north-west and also occurring in east Africa, where many specimens bear the characters of both, which might be expected where subspecies overlap. The southern bird does not, however, in my opinion, meet with the north-western form throughout its range.

The range of the two races appears to be as follows :—

HALCYON SENEGALENSIS SENEGALENSIS.

Alcedo senegalensis Linn. Syst. Nat. 12th ed. 1766, p. 180: Senegal.

Head ashy-grey in adults; rest of upper parts varying in colour according to light, but always somewhat darker than *H. s. cyanoleuca.*

Young much darker than adults ; head washed with blue; bill practically black ; below with vermiculations.

Immature birds with almost, or quite, fully-coloured bills have the head still washed with blue.

Range. Senegal, south to Cameroon, and north Angola east to French Congo and north-east and east Africa.

One specimen from Fernando Po in the National Collection appears to belong to this race, and only differs from mainland birds in lacking the dusky tip to the upper mandible.

HALCYON SENEGALENSIS CYANOLEUCA.

Alcedo cyanoleuca Vieill. op. cit.

Blue of the back extending over the head in all ages. Superciliaries white ; black round eye extending backwards over the ear-coverts. This latter character, though constant in this race, is found in individuals of the other race.

The young bird is altogether paler than the young of *H. s. senegalensis,* and has a distinct superciliary streak and black line over the ear-coverts.

Range. Zululand and Transvaal, through Matabeleland to Damaraland and south Angola, eastwards to east Africa, where it runs into and apparently interbreeds with *H. s. senegalensis.*

The other names that have been given to this Kingfisher are :—

Halcyon senegalensis fuscopileus Reichw. (Orn. Monatsb. 1906, p. 171 : Jaunde, Cameroon).

Halcyon senegalensis superflua C. Grant, Bull. B. O. C. vol. xxxv. 1914, p. 28 : Limpopo River. Wing given as 111 mm.

Halcyon senegalensis cinereicapillus Mearns, Proc. U. S. Nat. Mus. vol. xlviii. 1915, p. 391 : Kisingo, Uganda. Wing given as 106 mm. All of these would appear to be synonyms of either one race or the other.

It is worthy of note that Vieillot, in his description of *Alcedo cyanoleuca*, gives the bill as "rouge et terminé de noir," which led me to believe that possibly after all his name had no reference to the bird with the wholly black under-mandible. But on referring back to Temminck's Cat. Syst. du Cab. Orn. 1807, pp. 70 & 215, it will be found on p. 215 that the bill is given as "mandibule supérieure rouge vif, pointe noire ainsi que toute la mandibule inférieure."

In Jardine's Contributions to Ornithology for 1849 is a paper by Dr. Hartlaub entitled "A systematic index to a series of descriptions of Birds published by C. J. Temminck in his Cat. Syst. Cab. Orn." In this Dr. Hartlaub states that many of Vieillot's descriptions were either copied from Temminck's pamphlet, or founded on an examination of the same specimens; and that most of the South African birds, in the collection, had been brought home by Levaillant. This would account for *H. cyanoleuca* not being mentioned by either Pucheran, Rev. et Mag. Zool. 1853, or Hartlaub, Journ. für Orn. 1855, as being among Vieillot's types.

139. **Halcyon chelicuti**. Striped Kingfisher.

Alaudo chelicuti Stanley, Salt's Abyss. 1814, p. lvi: Chelicut, Abyssinia.

a. ♀. Loita, 6300 ft. Oct. 4.
b. ♂. Amala River, 5300 ft. Oct. 23.
c. ♀. Akinyo River, Bakoro, 3600 ft. Feb. 2.

Total length in flesh: ♂ 7 inches; ♀ 7$\frac{1}{8}$ & 7 inches. Wing: ♂ 81 mm.; ♀ 84 & 83 mm.

Both the October birds are in good dress and one is still moulting; the February one is somewhat worn, and has the tail washed with blackish, and very little blue on the wings; this being probably due to fading.

I can see no racial differences between eastern and western or northern and southern specimens.

[Irides brown; bill black, base of lower mandible red; legs and toes reddish black; black in front and red behind in the female from Loita.]

140. **Bucorvus abyssinicus.** Abyssinian Ground Hornbill.

Buceros abyssinicus Bodd. Tabl. Pl. Enl. 1783, p. 48: Abyssinia, *cf.* Lath. Syn. Birds, vol. i. 1781, p. 347.

a. ♂ ad. 70 miles N.W. of Baringo, 3500 ft. Jan. 3.

Total length in flesh: 41¼ inches. Wing: 545 mm.

In faded brownish dress, new black feathering appearing all over.

[Irides brown; bill black, base of upper mandible striped white, red, and black; bare skin blue; legs and toes black. Stomach contained ants and hoofs of a goat. I noticed these birds generally in small parties of from three to five individuals, either walking in the long rough grass, or more rarely perched in trees. They were nearly always very wild and difficult to shoot.]

141. **Lophoceros hemprichii.** Hemprich's Hornbill.

Buceros, Lophoceros, hemprichii Ehr. Symb. Phys., Av. 1828, fol. *aa.* footnote 3: Abyssinian coast-lands.

a. ♀ ad. Mt. Maroto, 4500 ft. Jan. 29.

Total length in flesh: 23¼ inches. Wing: 263 mm.

A good deal worn and faded, and in moult.

[Irides brown; bare skin sulphur-yellow; bill: upper mandible at base light reddish white, near cutting-edge darker, tip mahogany red, centre black; lower mandible at base reddish brown, centre black, tip mahogany red, cutting-edge black; legs and toes black. I only saw one pair of this Hornbill, one morning soon after daybreak.]

142. **Lophoceros nasutus nasutus.** North African Gray Hornbill.

Buceros nasutus Linn. Syst. Nat. 12th ed. i. 1766, p. 154: Senegal.

a. ♂ ad. Amala River, 5500 ft. Oct. 12.

b. ♂ ad. Narossura River, 5000 ft. Nov. 16.

c. ♂ ad. Kamchuru, Lobor, 3200 ft. Feb. 11.

Total length in flesh: 20¼, 20⅛, & 20 inches. Wing: 229, 223, & 222 mm.

All three are in rather worn dress.

[Irides brown; bill black, with cream patch on sides of upper mandible and streaks of same colour on lower; legs and toes black. This is one of the rarer Hornbills, and seems only to be found locally.]

The range of this race appears to extend from Senegal to the Niger, eastward to north-east Africa and south to British E. Africa; its place in Damaraland and Nyasaland, southward to the Vaal River, is taken by *L. n. epirhinus* Sund. (Œfv. Vet.-Ak. Förh. 1850, p. 108: Caffr. superiore =lat. 24° S. (Wahlberg), probably nr. the upper Limpopo, *cf.* Stark & Sclater, Birds of S. Africa, vol. iii. 1903, p. 115).

In the Journ. für Orn. 1905, p. 440, Erlanger separates the Arabian and north Abyssinian bird under the name *L. n. forskallii* Hempr. & Ehr. (Symb. Phys., Av. 1828, folio 2, footnote 8: Arabia), and certainly the two male specimens before me from southern Arabia have larger bills and are generally larger than specimens of true *L. n. nasutus*.

However, one male before me from Geragi, White Nile, is identical in every way with the Arabian birds: so until further material comes to hand it cannot be definitely settled as to how far this name can hold good.

Since the above was written I have seen the description of *Lophoceros nasutus maraisi* Roberts (Ann. Transv. Mus. vol. iv. 1914, p. 170: nr. Bagamoyo, German East Africa); which is similar in size and colour to *L. n. nasutus*, but smaller, having a wing in the male of 202 mm. There are no specimens in the British Museum from German East Africa, and Dr. Hartert has kindly informed me that the Tring Museum does not possess any either.

As this race has been founded principally on size, I append for comparative purposes the wing-measurements of all the adult males in the British Museum collection:—Gambia, 221; Portuguese Guinea, 221, 218; Gold Coast colony, 229, 222, 219, 214; Nigeria, 222, 197; Welle

River, 223; Bahr el Ghazal, 219, 216; Sudan, 250, 234, 230, 224, 223, 219; Abyssinia, 238, 227, 226, 221, 219; South Arabia, 251, 235; Uganda, 223, 222; British East Africa, 229, 228, 223, 222; Nyasaland, 209, 208, 206; Zambesi, 226, 221, 212, 200; Mashonaland, 234, 222, 214, 211, 208; Damaraland, 225, 222, 219; Bechuanaland, 237; Transvaal, 224, 218, 213, 211 mm.

It will be seen that considerable variation exists in size in birds from the same locality, as, for instance, the two from Nigeria, the six from the Sudan, and the four from the Zambesi; specimens from the first and the last localities overlapping Mr. Austin Roberts' measurement.

143. **Lophoceros erythrorhynchus erythrorhynchus.** Red-billed Hornbill.

Buceros erythrorhynchus Temm. Pl. Col. 36^e Livraison, 1823, sp. 19: Senegal.

a. ♂. 40 miles N.W. of Nakuro, 4200 ft. Dec. 23.

Total length in flesh: 17½ inches. Wing: 177 mm.

[Irides greyish yellow; bill red, base white; legs and toes black. Common.]

A worn and faded specimen and in moult. This is a small-billed bird, and I am by no means sure that it is really fully adult.

In naming this specimen I have carefully examined the whole series in the National Collection, and can divide them into two well-marked races as follows:—

LOPHOCEROS ERYTHRORHYNCHUS ERYTHRORHYNCHUS Temm. op. cit.

Having the bar on the outer tail-feathers confined to the outer web, a well-marked white streak over the eye in the majority of specimens, and having on the average more white on the middle secondaries.

Range. Senegal to the Niger, east through northern Belgian Congo to Abyssinia, Sudan, Somaliland, Uganda, and British East Africa.

Of this, *Buceros leucopareus* Hempr. & Ehr. (Symb. Phys., Av. 1828, folio *aa.* footnote 1 : Abyssinian coast-lands), and *Lophoceros mediarius* Sharpe (P. Z. S. 1895, p. 498 : Dabulli, Somaliland) are synonyms.

LOPHOCEROS ERYTHRORHYNCHUS CAFFER.

Buceros erythrorhynchus var. *caffer* Sund. Œfv. Vet.-Ak. Förh. 1850, p. 108 : Caffraria superior.

Having the bar on the outer tail-feathers complete across both webs, white streak over the eye not too well defined, and having on the average less white on the middle secondaries.

Range. Damaraland and Nyasaland to Bechuanaland and the western Transvaal.

Of this, *B. rufirostris* of Sund. op. cit. becomes a synonym; as also apparently does *Lophoceros damarensis* Shelley (Ibis, 1888, p. 66 : Otjimbinque, Damaraland). In the latter case I have carefully examined the two specimens on which Shelley based his name and I consider they are albinistic forms; the characters are not, therefore, those of a distinct race, especially as all other Damaraland birds are identical with those from other parts of southern Africa.

In the K. Sven. Vet.-Akad. Handl. Jan. 1911, pt. 5, p. 73, Lönnberg discusses the variation in size of the bill of these Hornbills, and thinks that habitat and soil have a great bearing on the question; in this he is possibly not far wrong.

144. **Lophoceros flavirostris flavirostris.** Yellow-billed Hornbill.

Buceros flavirostris Rüpp. Neue Wirb. 1835, p. 6, pl. ii. : Taranta-Gebirgs, Abyssinia.

a. ♂ ad. Kozibiri River, 2400 ft. Jan. 1.

b. ♂ ad. Turkwel River, 1800 ft. Jan. 15.

Total length in flesh : 22½ inches. Wing : 210 mm.

The Kozibiri specimen is very worn, and the one from the Turkwel is in good dress.

[Irides yellow; bill yellow, cutting-edge and tip black, base of both mandibles reddish, white spot before eye; bare skin pale blue and lilac; legs and toes black. Not very plentiful, found frequenting thorn bushes in the desert country.]

In naming these specimens I have had to examine the whole series in the National Collection; and can recognise three races of this Hornbill, which differ in the characters as given by Mr. Ogilvie-Grant in the Cat. Birds Brit. Mus. vol. xvii. 1892, p. 413:—

LOPHOCEROS FLAVIROSTRIS FLAVIROSTRIS Rüpp. op. cit.

Range. Abyssinia, Somaliland, Uganda, British E. Africa, and German E. Africa.

In the Journ. für Orn. 1894, p. 96, Prof. Reichenow has described an allied species of this Hornbill under the name *Lophoceros somaliensis* from Meid, Somaliland, and gives the distinguishing character as the red-coloured under mandible. The two specimens from Somaliland before me, taken respectively at Udveris and Goolis, do not differ from true *L. f. flavirostris*; so that at the moment I am quite unable to say whether the Somali form around Meid is a local race, a distinct species, or whether the name will eventually become a synonym.

LOPHOCEROS FLAVIROSTRIS LEUCOMELAS.

Buceros leucomelas Licht. Verz. Vög. Kafferl. 1842, p. 17: Kaffernland.

Range. Damaraland, Bechuanaland, Matabeleland, Mashonaland, Transvaal to Zululand.

LOPHOCEROS FLAVIROSTRIS ELEGANS.

Toccus elegans Hartl. P. Z. S. 1865, p. 86, pl. iv.: Benguella.

On the average rather smaller than either *L. f. flavirostris* or *L. f. leucomelas*.

Range. Angola and Loanda.

145. **Lophoceros deckeni.** Von der Decken's Hornbill.

Buceros (*Rhynchaceros*) *deckeni* Cab., v. d. Decken, Reisen, vol. iii. pt. 1, 1869, p. 37, pl. vi.: Ost-Afrika, Suaheli-Binnenland, *cf.* vol. iii. pt. 3, 1879, p. xxii.

a. ♂ ad. S. Guaso Nyiro, 2900 ft. Nov. 22.

Total length in flesh: 20½ inches. Wing: ♂ 193 mm.

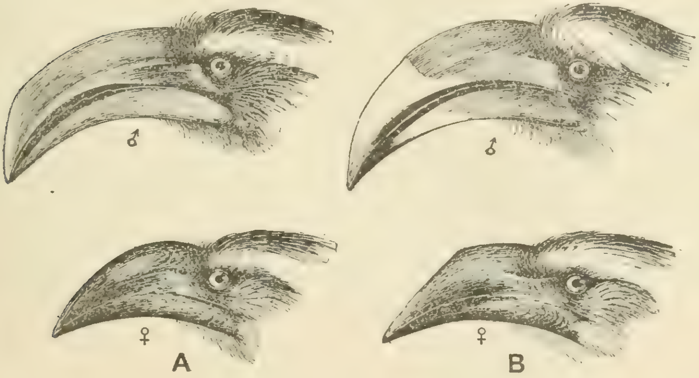
This specimen is rather worn and faded and is assuming new feathering.

[Irides brown; bill red, white, and black; bare skin at base of lower mandible blue-red; legs and toes black.]

Of this species *L. sibbensis* Sharpe (Bull. B. O. C. vol. iv. 1895, p. xxxii: Sibbe) becomes a synonym, as pointed out by Reichenow, Vög. Afr. vol. ii. 1902, p. 266.

Cabanis' plate shows the figure of a female with a black bill, and Sharpe's diagnosis reads, "et rostro toto nigro distinguendus." Besides which the type is now lying before me.

Text-figure 3.



A. Heads of adult male and female of *Lophoceros deckeni.*
B. Heads of adult male and female of *Lophoceros jacksoni.*

146. **Lophoceros jacksoni.** Jackson's Hornbill.

Lophoceros jacksoni O.-Grant, Ibis, 1891, p. 127: Turquel, Suk, British E. Africa.

a. ♀ ad. W. of Mt. Leganisho, 5600 ft. Oct. 28.
b. ♂ ad. Weiwei River, 3100 ft. Jan. 7.
c. ♂ ad. Kozibiri River, 1800 ft. Jan. 16.
d. ♂ ad. Nakwai Hills, 3800 ft. Feb. 6.

Total length in flesh: ♂ 20, 19½, & 18¾ inches; ♀ 18 inches. Wing: ♂ 181, 177, & 170 mm.; ♀ 173 mm.

All are rather worn and faded.

The three males agree perfectly with the type of *L. jacksoni*, which I consider a sound species.

The female appears to be undescribed, and differs from the female of *L. deckeni* in having white tips to the wing-coverts.

When the bills of the two species are carefully compared, it will be noticed that the bill in the male of *L. deckeni* is more highly arched on the culmen and generally rather more curved than is the bill in the male of *L. jacksoni*.

The five females of *L. deckeni* when compared with the single female of *L. jacksoni* also bear out the same character, that is to say the bill of the former is rather larger and the culmen is obliquely truncated towards the tip, whereas in the latter the culmen curves towards the tip (see text-figure 3).

[♂. Irides brown; bill: upper mandible orange-red, spot near lores white, towards tip whitish, tip black; lower mandible orange-red, whitish towards tip, tip black; cutting-edge of both mandibles black; bare skin red and blue; legs and toes black. ♀. Irides brown; bill black; legs and toes black; bare skin pale blue and red. I may safely say this is the most common bird found in this dry district (Kozibiri River) and it is present everywhere.]

147. **Upupa senegalensis.** Senegal Hoopoe.

Upupa senegalensis Sw. Birds W. Africa, vol. ii. 1837, p. 114: Senegal.

a. ♂ ad. Annamuget, Bakoro, 3700 ft. Feb. 1.

b. ♂ ad. Falabek, 2900 ft. Feb. 23.

Total length in flesh: 11½ & 10¾ inches. Wing: 142 & 135 mm.

The Falabek specimen is worn and faded. The secondaries are not wholly white for their basal two-thirds, but have a black band on the outer web and more or less on the inner webs. It appears to be fully adult. The other is in good clean dress and appears to be immature, as it has the wing only 135 mm. and a total length of 10¾ inches. It has the basal two-thirds of the secondaries white, the innermost having a black band on the outer web only.

[Irides brown ; bill black, flesh-coloured at base ; legs and toes greyish-flesh. The bird from Annamuget has the bill brownish horn, black at tip. Very common.]

In naming these specimens I have carefully examined the whole of the African Hoopoes, and have come to the following conclusions :—

There is no doubt that many more specimens will have to be collected before workers will agree as to the number of species that can finally be recognised on the African continent ; but I feel sure, as Mr. Bannerman has concluded with regard to the Canary Island birds (*cf.* Ibis, 1914, p. 253), that too many forms have been described on what will probably prove to be mere individual variations.

The mainland birds can at once be divided into two groups : those *with* a white band across the primaries, and those *without* a white band across the primaries ; and it is the first group I propose to discuss here, leaving the second group to be discussed under the next species.

Of the group with white-banded primaries we have the following names to deal with as regards the mainland of Africa :—

Upupa epops epops.

Upupa epops Linn. Syst. Nat. 10th ed. 1758, p. 117 : Sweden.

Upupa epops major.

Upupa major Brehm, Vogelf. 1855, p. 78 : Egypt in winter.

Upupa epops butleri.

Upupa butleri Madarasz, Ann. Mus. Nat. Hung. vol. ix. 1911, p. 339 : Chor-Em-Dul, Blue Nile.

Upupa senegalensis Sw. Birds W. Africa, vol. ii. 1837, p. 114 : Senegal.

Upupa somalensis Salvin, Cat. Birds Brit. Mus. xvi. 1892, p. 13, pl. i.: Somali.

Upupa intermedia O.-Grant & Reid, Ibis, 1901, p. 674: Hülül, S. Abyssinia.

These, so far as the specimens before us show, range themselves into :—

UPUPA EPOPS EPOPS.

A regular visitant to Egypt, Somaliland, Abyssinia, Egyptian Sudan, and British E. Africa between October and March, though some appear to remain, as is shown by two specimens from Somaliland taken in July and September, two from Abyssinia in August, and one from Gambia taken in May.

UPUPA EPOPS MAJOR.

A somewhat larger race which, as shown by Nicoll (*cf.* Ibis, 1909, p. 483; Bull. B. O. C. vol. xxiii. 1909, p. 100; and Avicult. Mag. vol. ii. 1911, p. 260, fig.), is resident and breeds in Egypt.

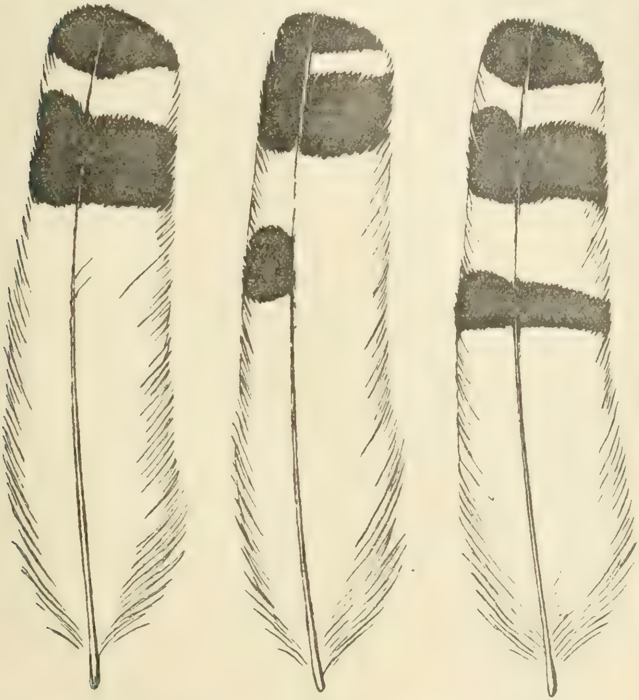
I have been unable to recognise *Upupa butleri*, as I can find no adults that bear out Madarasz' description, and the only specimens with wings of 125 mm. are obviously immature.

UPUPA SENEGALENSIS.

A brighter, more rufous form, differing at a glance from *U. e. epops* and *U. e. major* in the rufous sandy mantle and in having no white between the black and rufous of the crest. In most males the basal two-thirds of the secondaries is pure white, though this is not constant, and in most females the white two-thirds of the secondaries is crossed by two black bands, though this also is not always constant.

Two forms of this rufous Hoopoe under the names *Upupa somalensis* and *Upupa intermedia* have been described, and both in my opinion must become synonyms of *U. senegalensis*, as the character of the secondaries on which both are based is found in specimens of *U. senegalensis* from the same locality, as is clearly shown in the text-figure drawn from three specimens taken at Yo, Lake Chad (Boyd Alexander coll.).

Text-figure 4.



Fourth secondary of three males of *Upupa senegalensis* taken at Yo, Lake Chad, by Mr. Boyd Alexander.

Range. Senegal eastward to Abyssinia, Somaliland, and Uganda.

All the specimens of Hoopoes from Arabia that I have been able to examine belong to *U. e. epops.*

148. **Upupa africana.** South African Hoopoe.

Upupa africana Bechst. Kurze Uebers. vol. iv. 1811, p. 172: Congo and Cape of Good Hope.

a. ♂ ad. Kijabe, 6300 ft. Sept. 24.

Total length in flesh: 11½ inches. Wing 143 mm.

In good dress and but little worn. This is an aberrant specimen, inasmuch as it has on the inner web of the fourth primary of the right wing a trace of white next the shaft, on the inner web of the fifth a large white spot, and on the inner web of the sixth a trace of white on the middle of the web next the shaft; in the left wing the inner webs of the fourth and fifth primaries have large white spots, the sixth has a small white spot, and the seventh the merest trace of white on the middle of the web. Also all the secondaries are barred on the outer webs and some right across, where usually in adult males that part is wholly white.

This seems to point to its affinity with the probably more ancient form of *U. e. epops*, and also goes to prove that only general and average characters can be taken in the dividing up of the Hoopoes, as much allowance must be made for individual variation.

[Irides brown; bill black, dirty flesh at base; legs and toes bluish brown. Tolerably common.]

Of this second group *without* a white band across the primaries we have the following names to deal with:—

Upupa minor Shaw, Gen. Zool. vol. ii. 1812, p. 139: Congo and Cape of Good Hope.

Upupa cristatella Vieill. Gal. Ois. vol. i. 1825, p. 306, pl. 184: Malimbe to Cape of Good Hope. Both of these are founded on La Huppe d'Afrique, Audeb. & Vieill. Ois. dor. Promérops, 1802, pl. ii., as also is *U. africana* Bechst.

Upupa decorata Hartl. P. Z. S. 1865, p. 86: Benguella. The type is in the National Collection and is merely a female of *U. africana*; three specimens from northern Angola in the Ansorge collection agree perfectly with others from south and east Africa.

Upupa africana maior Reichw. Orn. Centralb. 1879, p. 72: Malange, Angola. This must become a synonym of *U. africana*; the name also is preoccupied by *U. major* Brehm.

Upupa capensis Swainson. Birds W. Africa, vol. ii. 1837, p. 115. This name is preoccupied by *Upupa capensis* Gmelin, Syst. Nat. 1788, p. 466, which is in its turn a pure synonym of *Fregilupus varius* Bodd.

Thus I do not recognise more than one race of *U. africana* which ranges from the Cape to Angola on the west and to Uganda on the east.

The series in the National Collection shows that this Hoopoe is found in south Africa during the months of Feb., May, June, July, Aug., Oct., Nov., and Dec. (Beira), in Nyasaland in May and Sept., in east Africa in Jan., Feb., May, July, and Nov., and in Damaraland in March and June; so that apparently no regular migration takes place, but only local ones dependent probably on the rains or some other unknown reason, *cf.* Ibis, 1911, p. 695.

In the Orn. Monatsb. 1913, p. 8, Prof. Reichenow has described a new Hoopoe under the name of *Upupa waibeli*: Bamugu, Kamerun, and says that in the crest and underparts it is similar to *U. africana*, but that the primaries are white-banded. I have not seen any specimens from Kamerun, nor from the Congo, which is, strictly speaking, the type locality of *U. africana*, and until specimens come from the Congo, if it occurs there, the correct nomenclature of this group cannot be fixed.

149. **Irrisor erythrorhynchus marwitzi.** Marwitz's Wood-Hoopoe.

Irrisor erythrorhynchos marwitzi Reichw. Orn. Monatsb. 1906, p. 171: Makalama, on the Wembere steppe, German East Africa.

a. ♂ ad. Amala River, 5400 ft. Oct. 17.
b. ♀ ad. Turkwel River, 2000 ft. Jan. 11.

Total length in flesh: ♂ 16⅛ inches; ♀ 15½ inches.

Wing: ♂ 157 mm.; ♀ 139 mm.; culmen: ♂ 49 mm. ♀ 46 mm.

[Irides brown; bill, legs and toes red. Common, and found in small flocks, and is very noisy.]

In naming the four specimens in this collection belonging to the genus *Irrisor* I have taken the opportunity of laying out the fine series in the National collection, and in the following revision I give the results of a very careful examination of all the names and all the species and subspecies.

Several ornithologists have from time to time revised the group according to the material before them, notably Mr. Ogilvie-Grant in the Bull. B. O. C. vol. xii. 1901, p. 36, in the 'Ibis' for 1902, p. 432 and 1905, p. 209, and Prof. Neumann in the Journ. für Orn. 1905, p. 194; but the principal facts have been overlooked, that is, that the name "*viridis*" is synonymous with "*erythrorynchos*" and that "*senegalensis*" is based on the immature plumage of a red-billed form.

This group, like many others that show constant variation within certain geographical areas, compels the worker to do one of two things, either to lump most of the forms under one name, which course is obviously incorrect, or to recognise these constant variations and admit several geographical forms.

In working this group I have tried to limit the number of these forms, but they work out easily into three subgroups, *i. e.*:

1. Bill red, wings and tail spotted.
2. Bill red, wings and tail not spotted.
3. Bill black, wings and tail spotted.

Counting the species and subspecies, no less than twelve forms are recognisable, eleven of which are quite well defined.

It is with the young and immature specimens that difficulty is experienced, but even these, when the eye has grasped the differences between the adults, can be picked out and put into their proper place.

The groups and forms I recognise are as follows:—

(1) Bill red in adults, wings and tail spotted.

IRRISOR ERYTHRORHYNCHUS ERYTHRORHYNCHUS.

Upupa erythrorynchos Lath. Ind. Orn. i. 1790, p. 280: Africa.

Of this, the following are synonyms :—

Upupa viridis Licht. (Cat. Hamb. 1793, p. 22 : Terra Cafrorum). Inasmuch as all the evidence points to Latham having described a south African bird, and his plate (Syn. Supp. 1787, p. 124, pl. 110), in my opinion shows a small spotted bird, Lichtenstein's locality also is in the eastern part of Cape Colony, therefore "*erythrorynchos*" should in future be used for the short-tailed small-spotted bird from the Knysna.

It must be remembered that Levaillant's specimens were collected between the years 1781–1785, that is to say 21 years before his Hist. Ois. de Paradis was published, in which the plate of his "Promérops Moqueur" undoubtedly shows the short-tailed bird, and two years before Latham published his figure of the "Red-billed Promerops" in the Syn. Supp. Is it not possible therefore that both Latham and Lichtenstein handled some of Levaillant's specimens, whose travels did not extend eastward beyond about King Williams Town or north beyond about the Compass Berg.

Promerops purpureus Shaw & Miller, Cimel. Phys. pl. 52, 1796; founded on Latham's *U. erythrorynchos.*

Irrisor capensis Less. Traité, 1831, p. 239 (part.) : type locality by tautonymy, founded on Latham's *U. erythrorynchos.*

Adult. Spots on wings and tail small; tail short, under 8 inches, central feathers and coverts distinctly washed with purple on their upper side, mantle and breast bright bronze-green, crown washed violet-blue, some specimens washed with green, throat on the average violet-blue, inside of wings washed with green.

Young. Mantle, head, and breast black washed with violet and purple bronze.

Range. Forests of the Knysna eastward to Elands Post, now Alice, Cape Colony.

Note. This race apparently retains the black bill of the young for only a short period.

IRRISOR ERYTHRORHYNCHUS SENEGALENSIS.

Falcinellus senegalensis Vieill. Enc. Méth. vol. ii. 1822, p. 580 : Senegal.

Of this, *Nectarinia melanorynchos* Licht. (Verz. Doubl. 1823, p. 15 : Senegal), and *Irrisor erythrorhynchus guineensis* Reichw. (Orn. Monatsb. 1902, p. 79 : Portuguese Guinea) become synonyms.

The series in the National Collection shows that "*senegalensis*" is not a black-billed race, but ultimately assumes a red bill.

Adult. General appearance much darker than *I. e. marwitzi*; mantle, neck, and breast strongly washed with blue, top of head greenish, throat rather more steely blue than in *I. e. marwitzi*, tail on the average longer, 9 to 11 inches, central tail-feathers steely blue on the upper surface, faintly washed with purple. Spots on wings and tail large, inside of wings washed with green.

Immature. Mantle and breast slightly more bronzy than in the adult.

Young. Body and head black washed with violet and purple-blue as in *I. e. marwitzi*, but differing from the young of that race in having the tail longer and the central feathers steely blue on their upper surface.

Range. Senegal and Gambia, Portuguese Guinea, Gold Coast, Dahomey to Lake Chad.

Note. This race retains the black bill of the young for a rather long time and does not assume the red bill with the first moult.

IRRISOR ERYTHRORHYNCHUS ANGOLENSIS.

Irrisor erythrorhynchus var. *angolensis* Reichw. Vög. Afr. ii. 1902, p. 339 : Kakonda, Angola.

Adult. Similar to *I. e. marwitzi*, but having the top of the head steel-blue. Spots on wings and tail large. Tail about 9 inches.

Range. Angola.

IRRISOR ERYTHRORHYNCHUS NILOTICUS.

Irrisor erythrorhynchus niloticus Neum. Orn. Monatsb. 1903, p. 181 : Goz abu Guma, White Nile.

Of this, *Irrisor erythrorhynchos neglectus* (Neum. Journ. für Orn. 1905, p. 194: Schambala River, Male) becomes a synonym, as from the description it is simply a black-billed young bird of *I. e. niloticus.*

Adult. General appearance rather duller and darker than *I. e. marwitzi*, mantle, breast, and head having a faint wash of steel-blue; central tail-feathers steel-blue on their upper surface; inside of wings washed with blue. Spots on wings and tail large. Tail about 8½ to 9 inches.

Young. Body and head black, washed with steel-blue, always some bronzy green on mantle.

Range. White Nile and Bahr el Ghazal, the greater part of Abyssinia, except perhaps Ogaden, south to Lakes Stephanie and Rudolf.

Note. This race retains the black bill of the young for a rather long time and does not appear to assume the red bill with the first moult.

From the extreme north of Abyssinia, Prof. Neumann has described a race under the name *Irrisor erythrorhynchus abyssinicus* (Orn. Monatsb. 1903, p. 182: Arba Schiko, Anseba River) which appears to be referable to his *I. e. niloticus,* but the constant character of the particoloured bill compels me to recognise it as a distinct race, at any rate until full red-billed birds are brought back from the Anseba River Valley or nearer the Red Sea. The range of this race is at present the Tigre and Bogos districts of northern Abyssinia. Tail 8½ to 9 inches.

IRRISOR ERYTHRORHYNCHUS MARWITZI.

Irrisor erythrorhynchos marwitzi Reichw. Orn. Monatsb. 1906, p. 171: Makalama in the Wemberesteppe, German E. Africa.

Of this, *Irrisor erythrorhynchus brevirostris* Gunn. & Rob. (Ann. Transv. Mus. vol. iii. 1911, p. 113: Villa Pereira, Boror, Portuguese E. Africa, see also Journ. S.A. Orn. Union. vol. viii., 1912, p. 26) becomes a synonym, as birds from Portuguese E. Africa agree perfectly with specimens from the north and south, and the bill is *not* shorter.

Adult. Differs from *I. e. erythrorhynchus* in having the spots on the wings and tail large and the tail longer, 8½ to 10 inches, central feathers and coverts strongly washed with purple on their upper surface, rest of plumage as *I. e. erythrorhynchus.*

Young. Plumage as young of *I. e. erythrorhynchus,* but wing- and tail-spots large and tail longer.

Range. Natal, Swaziland, Transvaal, Portuguese East Africa, Matabeleland, Mashonaland, Nyasaland, northern Rhodesia, Belgian Congo (Dikulwe Valley), German East Africa, British East Africa (Mombasa to Rift Valley), Uganda up to the Turkwel River, island of Zanzibar.

Note. This race retains the black bill of the young for only a short period, apparently assuming the red bill with the first moult.

The Kakelaar, which occurs in Pondoland (see Shortridge, 'Ibis,' 1904, p. 191, and Davies, Journ. S. A. Orn. Union, vol. iii. 1907, p. 190), recorded in both cases under the name of "*viridis,*" I am unable to place, as I have no specimens available from that locality, but I should not be surprised to find that it turns out to be *I. e. marwitzi.*

IRRISOR ERYTHRORHYNCHUS RUWENZORÆ, subsp. nov.

The one specimen before me from Ruwenzori differs very markedly from any *Irrisor* found in East Africa, and certainly cannot be placed under either *I. e. marwitzi* or *I. e. niloticus.* In the Trans. Zool. Soc. vol. xix. 1910, p. 432, Mr. Ogilvie-Grant has recorded this specimen under the name of *I. viridis* Licht., but as I have shown that "*viridis*" is a synonym of "*erythrorhynchus*" and that *erythrorhynchus* is confined to the Cape Colony, the Ruwenzori bird must be given a new name.

Similar to *I. e. erythrorhynchus* in the size of the spots on the wings and tail, but having only the *two* outer pairs of tail-feathers spotted; length and colour of tail as *I. e. marwitzi*; throat and top of head washed with green; mantle, breast, and underside of wings as in *I. e. erythrorhynchus.* Iris dark brown, bill and feet red.

Wing 124 mm.; culmen 47; tarsus 19; tail about 208 mm., *i. e.* 8¼ inches.

Type in British Museum. ♀ ad. [No. 267]. South-east slopes of Ruwenzori, 3400 ft., collected May 2nd, 1906, by R. E. Dent.

IRRISOR DAMARENSIS DAMARENSIS.

Irrisor damarensis O.-Grant, Bull. B. O. C. vol. xii. 1901, p. 37 : Damaraland.

Adult. Mantle and breast black with a purplish bronze wash, top of head spangled dark coppery bronze, throat dark green. Wing- and tail-spots very large.

Range. Damaraland.

IRRISOR DAMARENSIS GRANTI.

Irrisor damarensis granti Neum. Orn. Monatsb. 1903, p. 182: Ngomeni, Ukamba, British E. Africa.

Adult. Differs from *I. d. damarensis* in having the mantle and breast strongly washed with deep violet, top of the head washed deep violet and spangled brighter reddish copper and bronze, throat brighter green.

Range. British E. Africa, Amala River to Lake Stephanie.

(2) Bill red, wings and tail not spotted.

IRRISOR BOLLEI BOLLEI.

Irrisor bollei Hartl. Journ. für Orn. 1858, p. 445 : Ashantee.

Adult. Head and throat deep buff. In the young bird there is an admixture of black and buff on the head and throat.

Range. Gold Coast Colony : Ashanti, Fantee, Mampon, and Wassu district.

IRRISOR BOLLEI JACKSONI.

Irrisor jacksoni Sharpe, Ann. Mag. Nat. Hist. (6) vol. vi. 1890, p. 503 : Kikuyu Country, British E. Africa.

Adult. Similar to *I. b. bollei,* but having the head and throat whiter, less deep buff.

In a young bird the head and throat are almost pure white with an admixture of black.

Range. British East Africa and Uganda: Kikuyu and Mt. Kenia to Mt. Elgon and Semliki Valley.

A specimen in the Boyd Alexander collection, taken at Molegbwe between Banzyville and the Setema Rapids on the Ubanghi River, French Congo, on the 11th of December, 1905, agrees perfectly both with specimens of *I. b. bollei* and *I. b. jacksoni,* so that I am unable to decide to which it belongs, though it should perhaps be referred to *I. b. bollei.*

(3) Bill black, wings and tail spotted.

IRRISOR SOMALIENSIS.

Irrisor somaliensis O.-Grant, Bull. B. O. C. vol. xii. 1901, p. 38: Fer Libah, Somaliland.

Adult. Bill always black, sometimes reddish at base of lower mandible, rather more curved and narrower than *Irrisor erythrorhynchus.* Above and below, including wings and upper side of tail, dark steel-blue washed with purplish, top of head dark steel-blue spangled with copper and greenish, throat dark bronze-green, front of neck coppery bronze and steel-blue; wing- and tail-spots large: tail longish, about 9 inches; inside of wings bright steel-blue.

Young. Rather duller than adults. Never any trace of metallic green on mantle or scapulars as in the young birds of *I. e. niloticus.*

Range. British Somaliland, south through Jubaland to the Tana River.

This is one more instance showing that Somaliland birds extend into Jubaland, and that the dividing line appears to be somewhere around the Tana River and Lorian Swamp.

The three other names to deal with are:—*Irrisor blythii* Heugl. (J. f. O. 1867, p. 202: Somaliland), which is a nomen nudum and may be a misspelling for "*bollei,*" though the locality given does not support this; *Irrisor theophilei* Heugl. (Orn. N.O.-Afr. vol. i. 1869, p. 220), which I do not think is an *Irrisor* at all; and *Irrisor sharpei* of Emin Pasha's Journal (*cf.* P. Z. S. 1894, p. 597), also a nomen nudum and probably a misspelling for "*jacksoni.*"

The tail-lengths given above have only been roughly taken from the base, just to give a comparative idea.

It is worthy of note that no *Irrisor* has yet been found in Cameroon, and Mr. G. L. Bates informed Mr. Iredale that during the many years he had spent there he had neither seen nor heard one.

150. **Irrisor bollei jacksoni.** Jackson's Wood-Hoopoe.

Irrisor jacksoni Sharpe, Ann. Mag. Nat. Hist. (6) vol. vi. 1890, p. 503: Kikuyu, British E. Africa.

a. ♂ ad. Mau, 9000 ft. Dec. 2.

In worn dress.

Total length in flesh: 13½ inches. Wing: 133 mm.

[Irides brown; bill red, blackish at tip; legs and toes red. Only seen once, a small flock being observed when crossing the Mau escarpment.]

151. **Irrisor damarensis granti.** Grant's Wood-Hoopoe.

Irrisor damarensis granti Neum. Orn. Monatsb. 1903, p. 182: Ngomeni, Ukamba, British E. Africa.

a. ♀ ad. Amala River, 5400 ft. Oct. 17.

In good dress; end of tail somewhat worn.

Total length in flesh: 14½ inches. Wing: 139 mm.

[Irides brown; bill red, tip blackish; legs and toes red.]

152. **Rhinopomastus cyanomelas schalowi.** Schalow's Scimitar-billed Wood-Hoopoe.

Rhinopomastus schalowi Neum. Journ. für Orn. 1900, p. 221: Usandawe, German E. Africa.

a. ♀ ad. Loita, 6300 ft. Oct. 5.

b. ♂ ad. Lemek Valley, 6500 ft. Oct. 7.

Total length in flesh: ♂ 12¾, ♀ 11 inches. Wing: ♂ 119, ♀ 104 mm. Culmen: ♂ 45·5, ♀ 33 mm.

Both are a little worn, and the male is moulting.

The female differs from the male, not only in the smaller size, but in having the forehead, sides of the face, throat and breast brownish, and the belly and under tail-coverts blackish.

[Irides dark brown; bill, legs and toes black. Stomach contained insects.]

In naming these birds I have had to examine all the series in the National Collection, and have come to the conclusion that only two races can be recognised, as follows:—

RHINOPOMASTUS CYANOMELAS CYANOMELAS.

Falcinellus cyanomelas Vieill. Nouv. Dict. d'Hist. Nat. xxviii. 1819, p. 165: Namaqualand.

A short-tailed race, being without or with only incomplete spots on the tail.

Range. River Quanza, Angola, Benguella, Damaraland to Lake Ngami, western Matabeleland (Bamangwato, Tati, Kanye) across to the high country of N.E. Transvaal (Woodbush, Zoutpansberg), western Transvaal, and Kroonstad, O.R.C., to Natal and Griqualand East.

RHINOPOMASTUS CYANOMELAS SCHALOWI Neum.

A long-tailed race, having the spots on the tail always well developed.

Range. Low country of N.E. Transvaal (Umzila's Country, Lehtaba) to east Matabeleland (Makalaka), Mashonaland, Portuguese East Africa, Zambesi River, N.E. Rhodesia, Nyasaland, German East Africa, Belgian Congo (Dikulwe Valley), Uganda, British East Africa, and Manda Island. The most northern limit appears to be along a line from Manda Island and Lamu through to Mt. Elgon to Ruwenzori.

Since writing the above I have seen Roberts' description in the Ann. Transv. Mus. vol. iv. 1914, p. 171, of *Rhinopomastus cyanomelas intermedius*, the type locality being given as Koodoes River, Zoutpansberg District, N.E. Transvaal. The characters on which it is founded are the length of the tail, *i. e.* males 165–155, females 146–136 mm., and "less white on the tail-feathers."

Another careful examination of the large series in the British Museum collection shows that the white on the tail, though constantly greater in *R. c. schalowi* when compared with specimens of *R. c. cyanomelas*, varies quite considerably individually and, moreover, in series from the same district, as is exemplified in British East African and Uganda specimens.

The measurement of the tails gave the following results:

Manda Island: ♂ 149 mm. Uganda: ♂ 165–147, ♀ 171–151 mm. British E. Africa: ♂ 176–163, ♀ 156–137 mm. German E. Africa: ♂ 166, ♀ 151 mm. N.E. Rhodesia: ♂ 175–174 mm. Nyasaland: ♂ 185–172, ♀ 163 mm. Portuguese E. Africa: ♂ 183–168, ♀ 158–146 mm. Lower Zambesi: ♂ 175–168, ♀ 167 mm. Eastern Matabeleland: ♂ 167–146, ♀ 164–161 mm. Mashonaland: ♂ 187–162, ♀ 167 mm. Eastern Transvaal (low country): ♀ 144 mm.

Neumann, Journ. für Orn. op. cit., gives the measurements of the tail of four specimens from German East Africa, males 205 and 180, females 175 and 168 mm.

The above list shows not only that great individual latitude must be allowed, but that Roberts's measurements are very closely matched in birds from German East Africa and are actually equalled by those from Uganda, thus compelling me to place his name as a synonym.

For comparative purposes, I append a list of tail-measurements of *R. c. cyanomelas* taken from the Museum series:—Eastern Transvaal (high country): ♂ 145 mm. Western Transvaal: ♂ 129 mm. Orange River Colony: ♂ 130–127. Natal: ♂ 138, ♀ 136 mm. Griqualand East: ♀ 119 mm. Cape: ♂ 136 mm. Bechuanaland: ♀ 117–113 mm. Western Matabeleland: ♂ 140–133 mm. Damaraland: ♂ 140–121, ♀ 123–120 mm. Benguella: ♂ 139 mm.

153. **Rhinopomastus cabanisi.** Cabanis' Scimitar-billed Wood-Hoopoe.

Irrisor cabanisi Filippi, Rev. et Mag. Zool. 1853, p. 289: "entre le quatrième et le troisième degré nord = about 120 miles S. of Khartoum.

a. ♂ imm. Amala River, 5500 ft. Oct. 15.

b. ♀ ad. 40 miles N.W. of Baringo, 3400 ft. Jan. 1.

c. ♂ ad. Mt. Maroto, Maroto Stream, 3700 ft. Jan. 26.

Total length in flesh: ♂ ad. 10¾, imm. 9¾, ♀ 9¼ inches. Wing: ♂ ad. 108, imm. 107, ♀ 96 mm. Culmen: ♂ ad. 38, imm. 34, ♀ 29·5 mm.

All three are in good dress, the female differing from the male in being smaller and having the underparts dull sooty.

The immature male is larger than the female, but has a rather shorter bill than the adult male and has the underparts sooty.

There are no specimens in the National Collection from anywhere near the type locality, so I am quite unable to say whether these specimens would agree with those from near Khartoum.

[*Adult.* Irides brown; bill orange, tip black; legs and toes blackish in male, black in female.

Immature. Irides dark brown; bill yellow, tip black; legs and toes black.

Several seen in the Rift Valley, but appears to be scarce near Mt. Maroto.]

154. **Dicrocercus hirundineus heuglini.** Heuglin's Swallow-tailed Bee-eater.

Dicrocercus hirundineus heuglini Neum. Bull. B. O. C. vol. xvi. 1906, p. 113: Bongo, Bahr el Ghazal.

a. ♂ ad. Nakwai Hills, 3800 ft. Feb. 6.

Total length in flesh: 9¼ inches. Wing: 92 mm.

In bright plumage and but slightly worn.

[Irides red; bill black; legs and toes greyish brown. The Nakwai Hills was the only locality where this species was observed, two being seen, but both were very wild.]

In naming this specimen I have examined the whole series in the National collection, and can only recognise three races of this Bee-eater, as follows:—

DICROCERCUS HIRUNDINEUS HIRUNDINEUS.

Merops hirundineus Licht. Cat. Rer. Rar. 1793, p. 21: No locality. Cf. *Merops hirundinaceus* Vieill. Nouv. Dict. d'Hist. Nat. vol. xiv. 1817, p. 21: Petits Namaquois; also Levaill. Hist. des Ois. Paradis, 1806, p. 36: "sur les bords de la Rivière d'Orange."

I agree with Dr. Forbes and Mr. Robinson, Bull. Liverp. Mus. vol. ii. 1899, p. 30, and Prof. Neumann, Bull. B. O. C. vol. xvi. 1906, p. 113, that *Merops furcatus* Stanley (Salt's Abyss. vol. iv. 1814, p. lvii: Adowa, Abyssinia) must become a synonym. Through the kindness of Dr. Clubb, of the

Liverpool Museum, I have also examined the type, and it is undoubtedly a bird of the southern form and, as stated by Prof. Neumann, must have been procured at Mozambique, where Salt remained some time, see pp. 20–83 of 'Voyage to Abyssinia,' 1814.

No blue on forehead; rump, belly, and under tail-coverts aquamarine; band across lower throat medium cobalt-blue; throat pale cadmium-yellow.

Range. Angola, Damaraland, Namaqualand, Lake Ngami and Bechuanaland, Rhodesia, Transvaal, Natal, Portuguese East Africa, Nyasaland, Belgian Congo (Lufupa River) to Dar-es-Salaam, German East Africa.

DICROCERCUS HIRUNDINEUS CHRYSOLAIMUS.

Merops chrysolaimus Jard. & Selby, Ill. Orn. vol. ii. 1830, pl. 99: Sierra Leone.

In the Bull. Liverp. Mus. vol. ii. 1899, p. 30, Dr. Forbes and Mr. Robinson state that Jardine & Selby's name is ambiguous and "the figure, moreover, is not that of the West African species."

In this I think they are wrong, and I agree with Neumann, Bull. B. O. C. xvi. 1906, p. 113, that the plate "undoubtedly" represents a bird with a blue forehead; moreover, Jardine & Selby's type is in the British Museum, was collected at Sierra Leone by a Dr. Ferguson, and bears on the back of the label in Jardine's handwriting "Authority for Pl. 99 in Ornith. Illust."

Blue band across forehead; rump, belly, and under tail-coverts more ultramarine; band across lower throat cobalt-blue; throat medium cadmium-yellow.

The young bird has no blue on the forehead, but when compared with young birds of *D. h. hirundineus* the rump is found to be of a much deeper blue.

Range. Senegal, Gambia, Sierra Leone, Gold Coast, and Nigeria to Lake Chad.

DICROCERCUS HIRUNDINEUS HEUGLINI.

Of this, I consider that *D. h. omoensis* Neum. (Bull. B. O. C. vol. xvi. 1906, p. 114: Koscha, Omo River) must become a synonym.

Similar to *D. h. chrysolaimus*, but having the blue of the band across the lower throat, rump, and under tail-coverts much deeper.

Range. Abyssinia and the Sudan to Uganda.

155. **Melittophagus pusillus cyanostictus.** Eastern Little Bee-eater.

Melittophagus cyanostictus Cab., von der Decken, Reisen in Ost-Afr., Vögel, vol. iii. 1869, p. 34: Mombasa.

a, b. ♂ ad. Mt. Suswa. Sept. 25 & 27.

c. ♂ ad. Amala River, 5400 ft. Oct. 18.

d, e. ♂ ♀ ad. 12 miles E. of Amala River, 5700 ft. Oct. 26.

f, g. ♂ ♀ ad. Kozibiri River, 2400 ft. Jan. 21.

Total length in flesh: ♂ 7–6½ inches; ♀ 7–6½ inches. Wing: ♂ 84–83 mm.; ♀ 80–78 mm.

These seven specimens are in quite good dress and are only very slightly worn.

The birds from Mt. Suswa and the Amala River have blue on the forehead, though three have but the smallest indication of it and show no approach to the broad blue band on the forehead of more northern specimens; therefore it would appear that these specimens are at about the southern limit of the range of this race, and are beginning to merge into the wholly green forehead of *M. p. meridionalis*.

[Irides red; bill black; legs and toes blackish flesh, brownish flesh, dirty flesh or dirty grey. Tolerably common everywhere.]

A careful examination of the large series in the British Museum gives the following results as regards the three races of this Bee-eater:—

MELITTOPHAGUS PUSILLUS PUSILLUS.

Merops pusillus P. L. S. Müll. Linn. Nat. Syst. Suppl. 1776, p. 95: Senegal, *ex* Buffon.

General appearance rather more golden than *M. p. meridionalis*; neck-patch black, with a very narrow line of blue between the black and the yellow throat; supercilium absent, or only the merest indication: forehead uniform with top of head. Young birds distinctly paler above and below than the young of *M. p. meridionalis.*

Range. Senegal to Nigeria and Lake Chad district.

MELITTOPHAGUS PUSILLUS CYANOSTICTUS.

Melittophagus cyanostictus Cab. op. cit.

In the Bull. B. O. C. vol. x. 1899, p. 26, Hartert asserts that Cabanis' "*cyanostictus*" is described from Natal, and renames the East African bird under the name of *Melittophagus sharpei*; but in this he is undoubtedly mistaken, as Cabanis distinctly gives Mombasa as his type locality, as has since been pointed out by Reichenow in the Orn. Monatsb. 1900, p. 86.

Size as in *M. p. pusillus*: neck-patch as follows: next to yellow throat a very narrow line of emerald-green, below this a line of blue and rest of patch black, washed with blue in most specimens; superciliary stripe broad and distinct; forehead blue, uniform with supercilium. The one young bird before me is darker above and below than the young of *M. p. meridionalis.*

Range. Southern Abyssinia, Somaliland, British East Africa, to Teita, German East Africa.

MELITTOPHAGUS PUSILLUS MERIDIONALIS.

Melittophagus meridionalis Sharpe, Cat. Birds Brit. Mus. vol. xvii. 1892, p. 45: Natal.

As I cannot see any difference between Nubian specimens and those from south Africa, the *M. p. ocularis* Reichw. (Orn. Monatsb. 1900, p. 86: Nubia, N.E. Africa), must become a synonym.

Size as in *M. p. pusillus.* General colour less golden; neck-patch black, with a very narrow line of blue between the black and the yellow throat; superciliary stripe distinct; forehead uniform with top of head. The young birds are distinctly darker above and below than the young birds of *M. p. pusillus*, but not so dark as the single young bird before me of *M. p. cyanostictus.*

Range. Natal and south Africa generally, north to the Congo River mouth on the west; on the east to Dar-es-Salaam, German East Africa, and across to Victoria Nyanza, Uganda and Ruwenzori up through the Albert Nyanza and Nile Valley to Kordofan, eastern and northern Abyssinia to Nubia.

Merops angolensis Gmelin (Syst. Nat. vol. i. 1788, p. 463: Angola) is at present an indeterminate name, and the description, especially of the cuneiform tail, in my opinion does not apply to a Bee-eater at all.

156. **Melittophagus lafresnayii oreobates.** Cinnamon-chested Bee-eater.

Melittophagus oreobates Sharpe, Ibis, 1892, p. 320: Savé, Mt. Elgon, B. E. Africa.

a, b. ♂ ♀ ad. Amala River, 5300 ft. Oct. 19 & 24.

Total length in flesh: ♂ 8¼ inches; ♀ 8½ inches. Wing: ♂ 100 mm.; ♀ 101 mm.

Both are in good dress and but slightly worn. The male differs from the female in having the blue on the neck blacker and in having bluish edges to the green outer web of the secondaries, these being wholly green in the female.

The female has a faint indication of blue next the nostrils, but not sufficient to be confounded with *M. l. lafresnayii.*

[Irides red; bill black; legs and toes dirty flesh-colour. Tolerably common at the Amala River.]

I am of opinion that this race should be considered a subspecies of *M. lafresnayii*, the ranges of both being as follows:—

MELITTOPHAGUS LAFRESNAYII LAFRESNAYII.

Merops lafresnayii Guér. Rev. Zool. 1843, p. 322: Abyssinia.

The forehead and superciliaries broadly marked with blue; blue on neck dark ultramarine; chest more saffron.

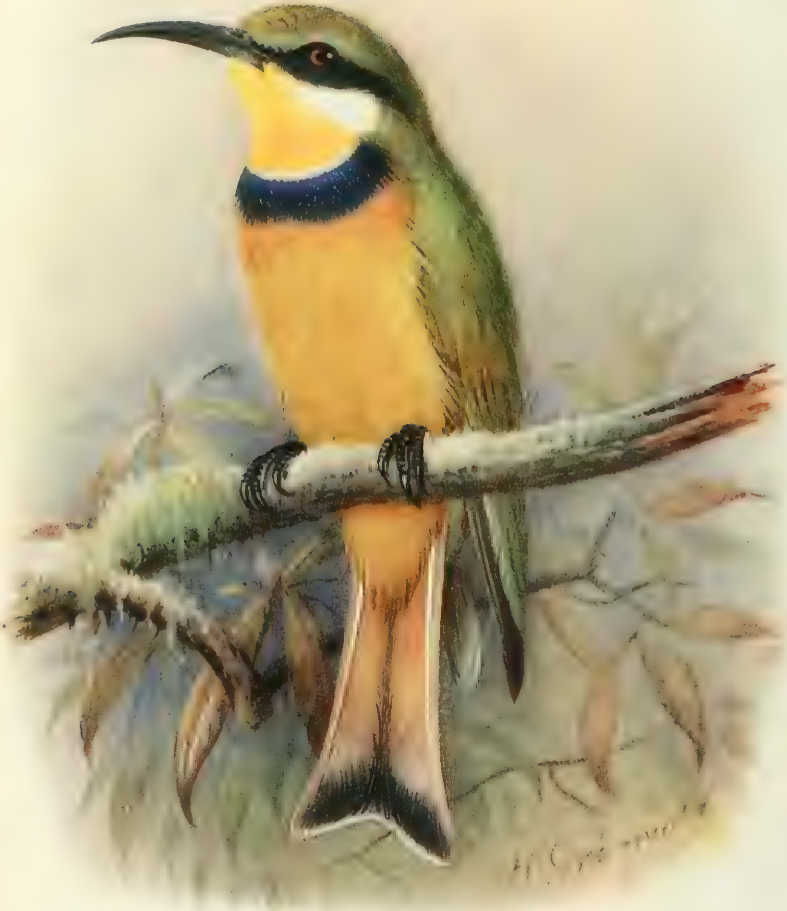
Range. Abyssinia only.

MELITTOPHAGUS LAFRESNAYII OREOBATES.

Forehead green, uniform with top of head; faintest indications of blue supercilium; blue on neck blackish indigo; chest more cinnamon. Size as in *M. l. lasfresnayii.*

Range. British East Africa (Mt. Elgon to German border) and Uganda, including Ruwenzori.

Ibis. 1915. Pl. IV.



MELITTOPHAGUS VARIEGATUS BANGWEOLENSIS.

MELITTOPHAGUS VARIEGATUS VARIEGATUS.

Merops variegatus Vieill. Nouv. Dict. d'Hist. Nat. vol. xiv. 1817, p. 25 : Malimbe, Loango.

This species, which comes near the two former in general characters, is much smaller than either, has the forehead green, the neck-patch dark ultramarine, and ranges into the country of *M. l. oreobates* as follows:—

Range. Gambia, Gaboon, French Congo and Congo River, Welle River, across to Uganda (Mwisi River, Lake Albert, Toro, Mabira, and Entebbe) and German East Africa (Bukoba, east of Victoria Nyanza).

It is worthy of note that all the east African specimens have a distinct superciliary stripe, and that most western specimens have no superciliary stripe or only an incomplete one. But although I have examined a good many eastern specimens, I have not been able to handle a sufficient number of well-collected specimens from the west.

I have to thank Mr. Rothschild and Dr. Hartert for kindly loaning me their specimens from Tring.

MELITTOPHAGUS VARIEGATUS BANGWEOLOENSIS. (Plate IV.)

Melittophagus variegatus bangweoloensis Claude Grant, Bull. B. O. C. vol. xxxv. 1915, p. 55 : Luena Dist., N.E. Rhodesia.

Adult male. Size as in *M. v. variegatus*, but differs from that race in having the blue band across the lower neck much *narrower* and of a somewhat deeper and darker tint; below this band there is only a *narrow margin* of saffron, and the rest of the underparts, including the throat, are rather paler than in *M. v. variegatus.*

Type: ♀ ad. in British Museum. Luena District, North-Eastern Rhodesia (within 10 miles of east shores of Lake Bangweolo), 17. vi. 08. S. A. Neave coll. Culmen 25, wing 85, tarsus 9, tail 63 mm.

Range. Lake Bangweolo District, N.E. Rhodesia.

Since the above has been written Mr. Mearns has given a name to the east African form of *M. variegatus*, under the name of *Melittophagus variegatus loringi*, Proc. U.S. Nat. Mus. vol. xlviii. 1915, p. 393, and gives the diagnostic features as larger and much paler and purer yellow on the under-parts, wing given as 89 mm. This, however, does not appear to be borne out by the series from east Africa examined by me, but, as other slight differences exist between western and eastern birds, as stated above, the eastern form should perhaps bear Mearns' name.

157. **Melittophagus bullocki frenatus.** Hartlaub's Red-throated Bee-eater.

Merops frenatus Hartl. Journ. für Orn. 1854, p. 257: Sennaar.

a. ♂ ad. Kittigom, Chua District, 2850 ft. Feb. 21.

Total length in flesh: 8½ inches. Wing: 100 mm.

In slightly worn dress.

This race is very closely allied to *M. b. bullocki*, but has a light blue line between the black under the eye and the red throat, this being absent in most specimens of *M. b. bullocki* or replaced by a few *green* feathers.

[Irides brown; bill, legs and toes black. Several were seen.]

The range of the two races appears to be as follows:—

MELITTOPHAGUS BULLOCKI BULLOCKI.

Merops bulocki Vieill. Nouv. Dict. d'Hist. Nat. vol. xiv. 1817, p. 13: Senegal.

Senegal, Gold Coast Colony and the Niger to Lake Chad and the River Shari (*Boyd Alexander*).

MELITTOPHAGUS BULLOCKI FRENATUS.

N.E. Belgian Congo, Bahr el Ghazal, Uganda, Sudan, and Abyssinia.

158. **Melittophagus bullockoides.** White-fronted Bee-eater.

Merops bullockoides A. Smith, S. A. Q. Journ. vol. ii. 1834, p. 320: South Africa.

a, b. ♂ ad. Mau, 6900 ft. Sept. 30.

c. ♂ ad. Southern Guaso Nyiro, 6100 ft. Oct. 2.

Total length in flesh: 9¾ inches. Wing: 119, 117, & 116 mm.

All three are in bright plumage and but very slightly worn.

[Irides dark brown; bill black; legs and toes bluish black, slate-grey or grey, claws black. Common and seen in small flocks.]

Spheconax albifrons (Cab. & Heine, Mus. Hein. vol. ii. 1860, p. 133) is a nomen nudum founded on *M. bullockoides* Smith; and *Merops smithii* Schleg. (Mus. Pays-Bas, vol. iii. *Merops*, 1863, p. 9: Cafrérie) is a substitute name for *M. bullockoides* of Smith, and in the description is compared with *M. bullocki.*

M. bullockoides ranges without variation from south Africa to north Angola on the west and British East Africa on the east.

159. **Merops apiaster.** European Bee-eater.

Merops apiaster Linn. Syst. Nat. 10th ed. 1758, p. 117: Southern Europe.

a. ♀ imm. Lemek Valley, 6000 ft. Oct. 8.

b. ♀? ad. 12 miles E. of Amala River, 5600 ft. Oct. 25.

Total length in flesh: 10 & 9¾ inches. Wing: ad. 139 mm.; imm. 145 mm.

The adult is in very worn faded plumage, new yellow feathers appearing on the throat. The immature is not worn and has short central tail-feathers.

[Irides red; bill black; legs and toes blackish flesh. In the specimen from the Lemek Valley the irides are given as brown, and the legs and toes as dirty grey.]

160. **Merops nubicus nubicus.** Nubian Carmine Bee-eater.

Merops nubicus Gm. Syst. Nat. vol. i. pt. i. 1788, p. 464: Nubia.

a. ♀ ad. Gondokoro. March 7.

Total length in flesh: 13½ inches. Wing: 149 mm.

In bright dress and but slightly worn.

[Irides red; bill black; legs and toes dull grey. Common from Gondokoro northwards.]

Merops nubicus Gmelin was founded on the "Le Guépier Rouge à tête bleue" of Buffon, Hist. Nat. vol. iv. 1779, p. 506, and this in turn refers to the plate no. 649 in the Pl. Enl. 1783 entitled "Guépier de Nubie," which must have been drawn in 1779, though apparently not published till four years later.

This plate shows a bird without elongated central tail-feathers, no black through the eye or on the ear-coverts, and the head coloured very blue; otherwise it agrees with *M. nubicus*, and as no other Bee-eater can be easily confounded with this species this plate can be safely accepted for it.

In the National Collection there is only one young example from the Transvaal of *Merops nubicoides* Des Murs et Puch. (Rev. Zool. 1846, p. 243: Port Natal), that has a blue throat, which, besides showing pink new feathers coming in by a moult, has this part of a much paler blue than in the young of *M. nubicus*.

Judging by the five young specimens of *M. nubicoides* before me, the normal colour of the throat is pinkish brown in the first dress, but there appears to be a second immature dress before the adult is reached, though much more material is required before a definite conclusion can be come to.

Curiously enough, the blue-throated young bird appears to be assuming the full adult dress direct and is not assuming an intermediate immature stage, as the pinkish brown-throated young appear to do.

The range of the two birds seems to be as follows:—

MEROPS NUBICUS NUBICUS.

Nubia, Abyssinia, Somaliland, Sudan, Bahr el Ghazal, Uganda, British East Africa, and Manda Island south to Pangani River, German East Africa, west to Nigeria, Gold Coast, Portuguese Guinea, Gambia, and Senegal.

MEROPS NUBICUS NUBICOIDES.

Natal, Transvaal, Matabeleland, Portuguese East Africa, Zambesi, north to Nyasaland and west to Damaraland.

161. **Scotornis climacurus.** Long-tailed Nightjar.

Caprimulgus climacurus Vieill. Gal. Ois. vol. i. 1825 (1823?), p. 195, pl. 122: Senegal.

a. ♂. Turkwel River, 2000 ft. Jan. 11.
b, c. ♂ ♀. Turkwel River, 1900 ft. Jan. 14.
d. ♂. Kozibiri River, 1800 ft. Jan. 16.
e, f. ♂ ♀. Kittigom, 2850 ft. Feb. 20.

Total length in flesh: ♂ 12¾, 10½, 10¼ & 9¼ inches; ♀ 10 & 9¼ inches. Wing: ♂ 153–144 mm.; ♀ 149 & 141 mm.

These six specimens are very evenly matched, and are all in the fulvous fawn phase, one or two inclining to brownish chestnut. All of them appear to be adult, though only one of the four males has the central tail-feathers elongated.

[Irides brown; bill brownish-flesh, tip black; legs and toes dark or brownish-flesh or greyish brown. Found in numbers under the thorn-bushes.]

An examination of the large series of this species in the British Museum collection shows that three phases of plumage appear to occur in this Nightjar, *i. e.*, a fulvous fawn, a brownish chestnut, and a grey, having almost every variation in between. When laid out in localities it is noticeable that the grey ones nearly all occur in the east on the Sobat, Blue and White Niles, though fulvous-fawn ones also occur there; and that the majority of western specimens are fulvous fawn or brownish chestnut, with only an occasional one inclining to grey. Again, from some localities a series shows very even coloration, whilst from others great variation individually exists, for instance, from the Sobat River all are boldly marked and incline to grey, whereas seven from Sierra Leone show a variation from a greyish specimen through brownish chestnut and fulvous fawn to one of a very light greyish sandy.

It may be that large series from every locality would show some method in the coloration of this apparently variable bird, a probability that the grey series from the Sobat River seems to point to.

162. **Macrodipteryx longipennis.** Long-plumed Nightjar.

Caprimulgus longipennis Shaw, Nat. Misc. vol. viii. 1796, pl. 265 : Sierra Leone.

a–c. ♂ ♀ ad. Kamchuru, 3250 ft. Feb. 10 & 11.

Total length in flesh : ♂ 8½ & 8¼ inches ; ♀ 9 inches. Wing : ♂ 174 & 172 mm. ; ♀ 162 mm.

All three specimens are in quite good dress. One of the males lacks the long wing-plumes, but is apparently adult. The female, besides being smaller, is slightly paler than the two males.

[Irides brown, eyelids yellow or light brown ; bill black, yellowish at base ; legs and toes brown or brownish-flesh. The male with plumes was shot sitting on the ground, and appeared to be squatting between the elongated feathers which project on either side. In the evenings several were seen flying together, and their appearance on the wing is most peculiar.]

As regards the name *Caprimulgus macrodipterus* Afzelius (*cf.* Lath. Gen. Syn. Suppl. ii. 1802, p. 264), used by Hartert in the 'Catalogue of Birds' (vol. xvi. 1892, p. 594) and quoted under Afzel. Descr. Sierra Leone, pl. 1794, I have examined carefully this work at the Linnean Society. The true title is 'Account of the Natural Productions of Sierra Leone,' by Adam Afzelius ; I find that it is in a 'Report of the Directors of the Sierra Leone Company,' dated the 27th of March, 1794, and is mainly devoted to the slave trade. In an appendix at the end is the only mention of wild birds, as follows :—"Birds. Of these the Directors have as yet received no perfect account. It is mentioned that there is a Crane of an extraordinary appearance, which becomes very tame ; it is reckoned very good food."

The only plate in the work is a map of Sierra Leone, which bears at the bottom the date 28 Nov. 1794.

At the end of the work there is a notice to the effect that another edition of the report is being published at the price of five shillings, but I cannot find that this was ever issued.

Dr. Hartert has himself in the 'Ibis,' 1896, p. 373, pointed out that the figure and description were never published, and apparently adopted the name on the authority of Sundevall in the Œfvers. Kongl. Vet.-Akad. Förh. vol. vi. 1849, pp. 156 & 159, who says that Afzelius brought home 23 species and that he saw some years before the plate of this Nightjar, but cannot now find it.

163. **Caprimulgus natalensis chadensis.** Alexander's Natal Nightjar.

Caprimulgus chadensis Alexander, Bull. B. O. C. vol. xxi 1908, p. 90: Lake Chad.

a. ♂ ad. Pader District, 3200 ft. Feb. 18.

Total length in flesh: 9½ inches. Wing: 155 mm.

A rather dark specimen in good dress.

[Irides brown; eyelids dull yellow; bill brownish-flesh, tip black; legs and toes flesh-colour. Only two of these birds were seen flying about the Pader Camp at dusk.]

It is remarkable that the only character of any value for separating northern from southern African birds is a slight difference in size; this is all the more remarkable seeing that in the south this Nightjar is only known from Natal and Zululand; the northern form occurs in Uganda, the Egyptian Sudan, the Welle River and Lake Chad Districts; but hitherto no Nightjar of this type has been recorded from any locality between these very widely separated regions, though large collections have been made in Portuguese East Africa, the Transvaal, and Nyasaland.

The measurement of the wings gives the following result:—South Africa, ♂ 163–157 mm. (type 161 mm.), ♀ 163–149 mm.; East Africa, ♂ 159–150 mm., ♀ 159–146 mm.—a difference of only 4 mm. between the largest specimens of both sexes.

I agree with Mr. Bannerman that at least four well-defined races of this Nightjar are recognisable (*cf.* Ibis, 1912, p. 247).

The range of these races appears to be as follows:—

CAPRIMULGUS NATALENSIS NATALENSIS.

Caprimulgus natalensis Smith, Ill. Zool. S. Africa, vol. ii. 1845, pl. 99: Port Natal.

A large race, having the wing in males 163–157 mm. and in females 163–149 mm.

Range. Natal and Zululand.

CAPRIMULGUS NATALENSIS FULVIVENTRIS.

Caprimulgus fulviventris Hartl. Journ. für Orn. 1861, p. 102: Bembe, Angola.

Size about as in *C. n. natalensis*; general colour much more fulvous. Wing: 154 mm. The type, a male, judging by the markings of the wings and tail, is the only specimen available.

Range. Angola.

CAPRIMULGUS NATALENSIS ACCRÆ.

Caprimulgus accræ Shelley, Ibis, 1875, p. 379: Accra.

Size rather smaller than in *C. n. natalensis*; general colour much greyer (*cf.* Ibis, 1912, pl. iv.). Wing: in males 154–151 mm.; the type, a female, judging by the markings of the wings and tail, has the wing 149 mm.

Range. Gold Coast Colony and Liberia.

CAPRIMULGUS NATALENSIS CHADENSIS.

Caprimulgus chadensis Alexander, op. cit.

Similar in plumage to *C. n. natalensis*; size, perhaps on the average, smaller. Wing: ♂ 159–150 mm.; ♀ 159–146 mm. The two types, a male and a female, measure respectively 153 mm. and 147 mm.

Range. Uganda, Egyptian Sudan, Welle River and Lake Chad Districts.

In his description Alexander compared his birds with *C. accræ*, from which, of course, the Lake Chad birds are quite different, instead of with the parent race *C. natalensis*, from which the Lake Chad birds only differ in being slightly smaller. Had this bird not been named by Alexander I should have felt inclined to place the northern African bird under *C. n. natalensis*; but seeing that a name is available, that a difference in size, though slight, does exist, and that a gap of 2000 miles at least separates the southern and the northern localities, I feel justified in keeping up *C. n. chadensis*.

CAPRIMULGUS NATALENSIS GABONENSIS.

Caprimulgus gabonensis Alexander, Bull. B. O. C. vol. xxi. 1908, p. 90: Gaboon.

In plumage very similar to *C. n. fulviventris*, but rather more mottled. Size much smaller. The types, a male and a female, judging by the markings of the wings and tail, are the only specimens available, and have the wing: ♂ 142 mm.; ♀ 139 mm.

Range. Gaboon.

164. **Caprimulgus poliocephalus.** Abyssinian Nightjar.

Caprimulgus poliocephalus Rüpp. Neue Wirb. 1840, p. 106: Kulla, Abyssinia.

a. ♀ ad. Hills S. of Narossura River, 7200 ft. Nov. 4.

Total length in flesh: 9 inches. Wing: 157 mm.

This specimen is in slightly worn dress. It agrees perfectly in the markings with a female of this species in the British Museum collection from Mt. Kenya, but is altogether darker, especially below; that is to say, it lacks most of the deep fulvous coloration. However, with only one specimen, and that a female, I prefer to place this bird under *C. poliocephalus*.

[Irides brown; bill black, base of lower mandible flesh-colour; legs and toes brown.]

In the female of this species the pattern of the white on the outermost tail-feathers agrees with that of *C. ruwenzorii* O.-Grant (Bull. B. O. C. vol. xxiii. 1909, p. 94: Mokia, S.E. Ruwenzori): but on the penultimate tail-feathers there is much less white, and the central tail-feathers are quite differently barred from those in *C. ruwenzorii*.

Sjöstedt (Zool. Kilimandjaro-Meru Exped. 1910, p. 101, pl. i.) has described a new Nightjar allied to *C. poliocephalus* under the name *C. palmquisti*, and gives the type locality as Kibonoto, Kilimanjaro; both the description and the plate agree with specimens of *C. poliocephalus* in the British Museum collection from Abyssinia, *except* for the lack of any white on the throat. It does not, however, appear to agree with the darkish specimen in this collection, and without seeing Sjöstedt's type I am inclined to think both his and my birds are merely colour-phases of *C. poliocephalus.* In his description he has compared his bird with either a female or a young bird of *C. poliocephalus.*

In looking up the literature of this Nightjar I happened to come across the name and description of Rüppell's "*tristigma*," and it appears to me that some readjustment of names is necessary in the "*trimaculatus*" group of Nightjars.

There are five names to deal with as follows:—

South Africa: *Caprimulgus lentiginosus* Smith, Ill. Zool. S. Afr. 1845, pl. 101: Great Namaqualand. Wing given as 7·6 inches.

West Africa: *Scotornis trimaculatus* Swains. Birds W. Africa, vol. ii. 1837, p. 70: West Africa. Wing given as 8 inches.

Caprimulgus sharpei Alex. Bull. B. O. C. vol. xii. 1901, p. 29: Gambaga, Gold Coast Hinterland. Wing given as 7 inches.

East Africa: *Caprimulgus tristigma* Rüpp. Neue Wirb. 1840, p. 105: Gondar, Abyssinia. Wing given as 6·9 inches.

Caprimulgus goslingi Alex. Bull. B. O. C. vol. xix. 1907, p. 47: Mt. Kaga Djirri, nr. Kemo River, French Congo. Wing given as 6·9 inches.

The series of thirteen specimens (nine males and four females) from south Africa now before me shows that some individual variation occurs, and that specimens from both west and east Africa can be perfectly matched with those from the south. Therefore coloration cannot be taken into account, nor the spots on the wings, which vary individually from three to four in all localities; so the only character left which could form a basis for separation into races is that of the size, and this appears to work out quite well.

With the somewhat limited material before me the races of this rather uncommon Nightjar appear to be as follows:—

CAPRIMULGUS TRIMACULATUS TRIMACULATUS.

Scotornis trimaculatus Swains. op. cit.

Range. Senegal, where doubtless Swainson's specimen was secured.

I think it doubtful if the Senegal bird is really different from the Gold Coast Colony race, but as Swainson gives a wing-measurement of his bird, a male by the description, as 8 inches = 203 mm. (which is probably incorrect), and as I have not seen specimens from Senegal, I am compelled for the present to keep this race separate.

CAPRIMULGUS TRIMACULATUS TRISTIGMA.

Caprimulgus tristigma Rüpp. op. cit.

Of this, I consider that *Caprimulgus goslingi* Alex. op. cit. must become a synonym.

Range. Abyssinia, British East Africa, and Gaima Range, headwaters Kibali River, eastern French Congo.

Wing in males 184–170 mm., females 170 mm. Rüppell gives the wing-measurement of his type as 6·9 inches = 175 mm., and Alexander gives exactly the same for his type.

CAPRIMULGUS TRIMACULATUS LENTIGINOSUS.

Caprimulgus lentiginosus Smith, op. cit.

Range. From Cunene River to Great Namaqualand, Rhodesia, and the Transvaal.

Wing in males 188–185 mm., females 187–183 mm. One bird from Rustenburg, Transvaal, a male, has the wing no less than 195 mm., but this appears to be abnormal. Smith gives the wing-measurement of his type as 7·6 inches = 193 mm., but the specimen which is said to be his type is now before me and is a female judging by the lack of white on the tail-tips; it has the wing 184 mm. = 7·3 inches.

CAPRIMULGUS TRIMACULATUS SHARPEI.

Caprimulgus sharpei Alex. op. cit.

Range. Gold Coast Colony and Cameroons.

Wing in males 176–170 mm.

Should this bird hereafter be found to be identical with that from Senegal, then Alexander's name would become a synonym of *C. t. trimaculatus.*

165. **Caprimulgus europæus europæus.** European Nightjar.

Caprimulgus europæus Linn. Syst. Nat. 10th ed. 1758, p. 193: Sweden.

a. ♂. Lengototo, 6200 ft. Nov. 10.

Total length in flesh: 10¼ inches. Wing: 196 mm.

The white spot on the first primary is large and extends to the shaft, as also does the one on the second primary, but this does not go across to the outer web.

[Irides brown; bill black; legs and toes mixed whitish and brown.]

I have carefully examined several males taken in different parts of Europe and find that the size of the wing-spots is not a character to rely on for separating *C. e. europæus* from *C. e. unwini*, cf. Hartert, Vög. paläarkt. Fauna, 1912, p. 847, though the spot on the second primary extending across the shaft to the outer web appears to hold good for *C. e. unwini.* I think, however, the paler coloration of *C. e. unwini*, as compared with *C. e. europæus*, is a much better and more constant character.

166. **Caprimulgus frænatus.** Salvadori's Nightjar.

Caprimulgus frænatus Salvad. Ann. Mus. Civ. Genova, vol. xxi. 1884, p. 118: Daimbi, Ada Galla, Central Abyssinia.

a, *b*. ♀ ad. Lemek Valley, 6000 & 6500 ft. Oct. 7 & 8.

c. ♀ imm. Amala River, 5500 ft. Oct. 12.

d, *e*. ♂ ad. Lengototo, 6200 ft. Nov. 10 & 11.

Total length in flesh: ♂ 10⅛ & 9⅝ inches; ♀ ad. 9¼ & 9 inches; ♀ imm. 9 inches.

Wing: ♂ 170 & 163 mm.; ♀ ad. 161 & 158 mm.; ♀ imm. 160 mm.

All are in good dress and but very slightly worn.

The adult females differ from the males in having less white on the tail, and both this and the spots on the wings are tinged with buff. The immature female has the wing-spots strongly washed with buff and the tip of the tail merely tipped with buff.

[Irides brown or dark brown, eyelids yellow-brown; bill in male black, base flesh-colour; in female brown, black at tip; legs and toes brown or dirty-flesh.]

I have not been able to examine any specimens actually from the type locality; Salvadori gives the wing-measurement of his type as 175 mm.

167. **Tachornis parvus parvus.** Abyssinian Palm Swift.

Cypselus parvus Licht. Verz. Doubl. 1823, p. 58: N.E. Nubia.

a. ♀ ? imm. Amala River, 5400 ft. Oct. 18.

b. ♂ ? imm. Nakwai Hills, 3400 ft. Feb. 9.

Total length in flesh: ♂ 7 inches, ♀ 6 inches. Wing: ♂ 140 mm; ♀ 135 mm.

Both the specimens are in good clean dress, the male being rather darker generally than the female. Neither has any streaks on the throat, this part being plain-coloured like the neck. Young birds with sandy edges to the feathers show that in the first dress the throat is plain and that the streaked throat is apparently only assumed by the full adult. In between the first dress and the full adult there appears to be an immature stage of plumage, which is similar in every way to the adult, but the throat lacks the streaks.

[Irides brown; bill in male black, in female dark brown; feet in male blackish-flesh, in female brownish-flesh. In the Nakwai Hills a large number were seen near a clump of palm trees.]

The following four races have been recognised by Reichenow in the Vög. Afrika, vol. ii. 1903, and by other authors:—

TACHORNIS PARVUS PARVUS Licht. op. cit.

TACHORNIS PARVUS GRACILIS.

Cypselus gracilis Sharpe, P. Z. S. 1871, p. 315: Madagascar. Wing given as 4·95 inches = 126 mm.

TACHORNIS PARVUS MYOCHROUS.

Cypselus myochrous Reichw. Journ. für Orn. 1886, p. 116: Karema, German East Africa. Wing given as 136 mm.

TACHORNIS PARVUS BRACHYPTERUS.

Tachornis parvus brachypterus Reichw. Vög. Afr. vol. ii. 1903, p. 386: Gambia. Wing given as 128–120 mm.

Two others, *Tachornis parvus læmostigma* Reichw. (Vög. Afr. vol. ii. 1905, p. 828: South Somaliland) and *Tachornis parvus griseus* Zedl. (Orn. Monatsb. vol. xviii. 1910, p. 58: Adiabo-Steppe, N.W. Abyssinia) are, I consider, synonyms of *T. p. parvus*, especially Zedlitz's name, which is described almost from Lichtenstein's type locality.

The series of this Swift in the British Museum measure in the wing as follows:—WEST AFRICA: Portuguese Guinea, ♀ 134; Senegambia, ♂ 138; Liberia, ♂ 127 (a very dark sooty-coloured bird); Cape Coast, no sex, 132; Gold Coast, ♂ 126, ♀ 121, no sex (eleven) 133–121: Niger, two no sex, 125 (one a dark specimen, agreeing with the one from Liberia); Gaboon, no sex, 121 & 120; between Niger and Lake Chad (Alexander), ♂ 131 & 126, ♀ 135-126; Island of Fernando Po, ♂ 124 & 130, this last a young bird, no sex 123; Angola, ♂ (four) 130–124, one young 122, ♀ (four) 130–121, one young 125; Damaraland, ♂ 129, ♀ (three) 135–126. EAST AFRICA: Abyssinia, no sex, 129; Sudan, ♂ 135, ♀ 125, no sex, 123; Lamu, ♂ 125, ♀ 114; British East Africa, ♂ 128, ♀ 135; Uganda, ♂ 140, no sex, 141; German East Africa, ♀ 135; Zanzibar, no sex, 129; Nyasaland, ♂ 132; SOUTH AFRICA: Senna, Zambesi, ♂ 126, no sex, 134 mm.

Prof. Reichenow has himself pointed out that very little reliance can be placed on the coloration; with this I concur, and it also seems to me that no great reliance can be placed on the wing-measurement, at least, as shown by the specimens enumerated above. Under these circumstance I prefer for the present to place the two specimens in this collection under the oldest name.

Certainly birds from Madagascar are decidedly darker than the majority of those on the mainland of Africa, and can be recognised as a distinct race under the name of *T. p. gracilis*; they have a wing-measurement of: four unsexed, 135–123 mm., a female from Comoro Islands has a wing of 125 mm.

168. **Micropus æquatorialis.** Abyssinian Great Swift.

Cypselus æquatorialis Von Müller, Naumannia, vol. i. part 4, 1851, p. 27: Abyssinia.

a. ♂ ad. Narossura, 6400 ft. Nov. 2.
b. ♀ ad. Lengototo, 6000 ft. Nov. 10.
c. ♀ ad. Kamchuru, 3250 ft. Feb. 12.

Total length in flesh: ♂ 9½ inches; ♀ 9⅛ & 9 inches. Wing: ♂ 213 mm.; ♀ 212 & 204 mm.

These three specimens appear to be fully adult and are in good clean dress.

[Irides brown; bill black; feet blackish-flesh. These large Swifts were seen more plentifully in Uganda than in British East Africa.]

There are in the British Museum collection seven specimens of this Swift as follows:—Abyssinia: Senafe, ♀, March, wing 106; Aila ♂, Feb., wing 208; Lake Tanganyika, ♀, December, wing 202; Nyasaland, ♂ ♀, no date, wing 203 & 201 (types of *C. alfredi*); North Angola, ♂, August, wing 199; Eastern Rhodesia, ♂, August, wing 198 mm.

A considerably larger series may show that birds from Nyasaland southwards are on the average smaller than those from British East Africa and Abyssinia; in which case the name, *Cypselus alfredi* Shelley (Birds Africa, vol. ii. 1900, p. 345: Mbara, Nyasaland) would be available for them.

I am strongly of opinion that *Micropus æquatorialis* should be considered as a subspecies of *Micropus barbatus*, both birds having a strong resemblance to each other and not, so far as we know at present, overlapping geographically.

Apus reichenowi Neum. (Bull. B. O. C. vol. xxi. 1908, p. 57: Donje Erok, N.W. of Kilimanjaro) is described as being similar to *M. æquatorialis*, but without white edges or dark subterminal bar to the feathers of the under surface.

Is not this possibly the young bird or the fully adult of *M. æquatorialis*?

169. **Micropus apus apus.** European Swift.

Hirundo apus Linn. Syst. Nat. 10th ed. 1758, p. 192: Sweden.

a. ♂ ad. Lengototo, 6000 ft. Nov. 10.

Total length in flesh: 7¼ inches. Wing: 167 mm.

This specimen has apparently not yet started to moult.

Sixteen specimens collected by myself in England have the wing-measurement as follows:—Ad. ♂ 176–170, one fully fledged young bird 165; ad. ♀ 175–165 mm. Total length in flesh: ♂ 7½–7¼; ♀ 7¾–7⅛ inches.

Of two adult specimens in the British Museum collection from Norway, one, a male, has the wing 172 and the other (unsexed) has the wing 167 mm.; also two adult males from Hampstead have the wing 166 and 165 mm.

[Irides brown; bill black; feet blackish flesh-colour.]

170. **Micropus apus pekinensis.** Chinese Swift.

Cypselus pekinensis Swinhoe, P. Z. S. 1870, p. 435: Peking.

a. ♀ ad. Lengototo, 6000 ft. Nov. 10.

b. ♂ ad. 10 miles S.W. of Maroto, 3900 ft. Jan. 31.

Total length in flesh: 7 & 6¾ inches. Wing: 164 & 156 mm.

Both these specimens agree perfectly with birds from Peking; both are in moult, the wing-feathers not being fully grown, which accounts for the small measurements given above.

[Irides brown; bill black; legs and toes black or blackish flesh. Abundant.]

In naming these two birds I have examined the whole series of the "*apus*" group of Swifts in the British Museum collection, and append the following remarks and wing-measurements:—As regards Africa, the names that have to be dealt with are, besides *M. a. apus* and *M. a. pekinensis*, *Cypselus shelleyi* Salvad. Ann. Mus. Civ. Gen. 1888, p. 227: Dembi, Shoa; *Apus apus carlo* Kollibay, J. f. O. 1905, p. 302: Northern Tunisia; *Apus apus marwitzi*, Reichw. Orn. Monatsb. 1906, p. 171: Makalama, German E. Africa;

and *Apus apus kalaharicus* Reichw. Orn. Monatsb. 1908, p. 81 : Kalahari, German S.W. Africa.

This group of Swifts is by no means easy to sort out into races, as individuals run each other so closely that it is extremely difficult to determine to which race they should belong, and in the measurement of the wing a wide range is found to exist, even though sexes are compared. In my opinion, too many races have been described, and three of the six names will have to become synonyms. A very careful comparison of the dated specimens before me shows that there are two migrants to Africa and one resident, as follows:—

MICROPUS APUS APUS.

A winter migrant to Africa: eight specimens in British Museum collection : two from Fantee and Cape Coast in February, wing 171 & 169 ; Tangier, no date, wing 167 ; British E. Africa, ♂ in Nov., wing 166 ; Yambuya, Upper Congo, wing 173 ; Nyasaland, ♀ in November, wing 173 ; Matabeleland, ♀ in December, wing 165 ; South Africa, no sex or date, wing 173 mm.

Measurement of a large series from England and Norway shows that the wing in males varies from 176–165 and in females from 175–165 mm. The paucity of African killed specimens in the Museum collection does not allow one to make definite statements about the migration of the European Swift, but I venture an opinion that further investigations will prove that the common line of movement is by the west coast, and that comparatively few migrate along the eastern side.

MICROPUS APUS PEKINENSIS.

Equal in size to *M. a. apus*, but general colour browner.

I agree with Hartert (*cf.* Vög. paläartk. Fauna, 1912, p. 838) that *M. a. kalaharicus* (wing given as 175–170 mm.) is a synonym of this race ; and I also consider *M. a. carlo* (wing given as 175 mm.) and *M. a. marwitzi* (no wing-measurement given) to be the same.

About equal in size to *M. a. apus*, but general colour browner. A winter migrant to Africa. Seventeen specimens in the British Museum collection measure:—from Tunis, wing 165; Abyssinia, two ♂, 27 July, wings 173 & 165, one young bird same date, no sex, wing 164, Aug. ♂ & ♀, wings 173 & 167, Feb., ♀ in moult, and therefore wing only 158, and another no date or sex, wing 170; British East Africa, two ♀ in moult, wing 164 & 156; Matabeleland, Nov., ♂, wing 179; East Damaraland, Oct., ♂, wing 167; Bechuanaland, Jan., ♂, wing 180, and three Feb., females, wings 174, 173, & 171; Transvaal, Jan., ♂ & ♀, wings 175 & 164 mm.

Measurement of specimens from Pekin have the wing in males 172; from Chefoo, ♂ 177–168, ♀ 176–164; Tian Shan, ♂ 182 & 174 mm.; thus giving a range of wing-measurement for Chinese birds of 182–168 in males and in females 174–164 mm. Swinhoe gives 7″ = 177 mm. for his type specimen, which was a male.

According to Hartert op. cit. this Swift breeds in Persia, Afghanistan, and south Siberia; so that it seems feasible that the birds that visit Africa during the northern winter are those that have bred at the most western limits of its range.

The seventeen specimens enumerated above point to the common line of migration being *via* the east coast, spreading rather westward as the movement proceeds southwards, but never occurring in west Africa proper.

Tunis seems rather too far west to be strictly in the line of migration of this bird, but certainly the single specimen labelled from that locality does not differ from Chinese birds.

MICROPUS APUS SHELLEYI.

Cypselus shelleyi Salvad. Ann. Mus. Civ. Gen. 1888, p. 227: Dembi, Shoa.

A resident species in east Africa; general colour very similar to *M. a. pekinensis*, but mantle perhaps darker and secondaries and coverts lighter. Size smaller, wing 160–144 mm., type given as 157 mm. Eight specimens in the British Museum collection: from Abyssinia, ♀, no date, wing 152, Dembi, ♂, June, wing 157 (one of the types), Senafe, ♂, April, wing 144; British East Africa, Nyiro, ♂, April, wing 148, Kikuyu, May, no sex, wing 148, Nairobi, ♀, June, wing 151, Naivasha, ♂, December, wing 160; these are all adult; one young bird from Zomba, Nyasaland, no sex, has a wing of 137 mm.

The range of this resident bird would appear to be from Senafe in Abyssinia to Zomba in Nyasaland.

The character given by Salvadori of the yellow feet does not hold good, and appears to be merely the way in which these members happen to dry.

There are three other species of Swift occurring on the mainland of Africa, that may be confounded with the above three forms, but which are really quite distinct from them; they are:—

MICROPUS MURINUS MURINUS.

Cypselus murinus, Brehm, Vogelf. 1855, p. 46: Siût, Egypt.

This is a very pale mouse-coloured (mausegrau) bird, with an extensive white throat, and appears to be a winter migrant to Egypt only, and does not occur elsewhere on the mainland of Africa. Wing, ♂ 169, no sex 170–158 mm., in seven specimens from Egypt in the British Museum, only three are dated, two February and one March.

Cypselus pallidus Shelley (Ibis, 1870, p. 445: Egypt) is a synonym and the type, a ♂, in the British Museum has a wing of 169 mm.

MICROPUS MURINUS BREHMORUM.

Apus apus brehmorum Hartert, Naum. Vög. Deutschl. vol. iv. 1901, p. 233: Madeira.

On the average rather darker than true *M. m. murinus*. Wing: Madeira, ♂, June, 175 mm., ♂, no date, 171 mm.; Swakop River, Damaraland, December, 176 mm.; Benguella, no date or sex, 170 mm.

The single specimen from Benguella does not agree perfectly with this race, having a darker forehead and but the merest trace of white on the throat; it is, however, too light in general colour to be placed under *M. a. pekinensis*; so that until more material is available from south-west Africa, I leave it for the present in the position Hartert has put it, *cf.* Vög. paläartk. Fauna, 1912, p. 839.

MICROPUS BARBATUS.

Cypselus barbatus Sclater, P. Z. S. 1865, p. 599: South Africa, *ex* Temm.

Rather darker than *M. a. apus*, with distinct black stripes on the throat and having a somewhat larger and broader bill.

A resident in South Africa. Wing in three males 180–173 mm., one female 182 mm.: three specimens not sexed have the wing 186–176 mm.

[To be continued.]

XIV.—*The "Mauritius Hen" of Peter Mundy.*

By W. L. SCLATER, M.A., M.B.O.U.

THERE has recently been published by the Hakluyt Society and edited by Lt.-Col. Sir Richard C. Temple, Bt., Peter Mundy's account of his travels in Europe and Asia in the early part of the seventeenth century.

Peter Mundy was born about the year 1596 at Penryn in Cornwall, and in addition to his travels in Europe as far as Constantinople and Archangel, he made three voyages to the east, the first to India in the East India Company's service in 1628–1634, the second with Sir Wm. Courten's fleet to India and Japan in 1635–1638, and the third to India in 1655–1656. He is supposed to have died about 1667 at his native town of Penryn.

The account of his travels, very carefully prepared by himself, has remained up till now in MSS. and unpublished in the Bodleian Library at Oxford, while there is a second less complete copy in the British Museum.

The second volume recently published by the Hakluyt Society contains an account of Mundy's first voyage to

India, and proves to us that he was one of the most observant and truthful of all the older travellers. Like Herodotus, he always carefully distinguishes between the things that he himself has seen and those which he has only got on hearsay.

On his return voyage in March 1633-4 he passed the Island of Mauritius without calling there, but in 1638, when homeward-bound from China, he called at the island and wrote a glowing account of the scenery, salubrity, and natural productions.

As regards the birds the following is an extract from the MSS., for the use of which I am indebted to Sir Richard Temple and to Miss L. M. Anstey, who is assisting Sir Richard in the transcription of the original. The account of this voyage will form vol. iii. of the whole work and will be published shortly.

"For Fowl, these following among the rest.

"The Dodo, although we now met with none, yet divers times they are found here, having seen at Surat brought from hence, and as I remember they are as big bodied as great Turkies covered with down, having little hanging wings like short sleeves, although are unuseful to fly withal, or any way with them to help themselves. Whether [? Neither] can they swim, but as other land fowl do, on necessity into the water, being Cloven footed as they are.

"A Mauritius Hen as [? is a] fowl as big as our English hens of a yellowish Wheaten Colour, of which we got only one. It hath a big, long, crooked, sharp, pointed bill, feathered all over, but on their wings they are so few and small that they cannot with them raise themselves from the Ground. There is a pretty way of taking them with a red cap but this * was struck with a stick. They be very good meat and are also cloven footed so that they can neither fly nor swim more than the former. Of these two sorts of fowl aforementioned, for ought we yet know, not any to be found out of this Island which lieth about 100 Leagues

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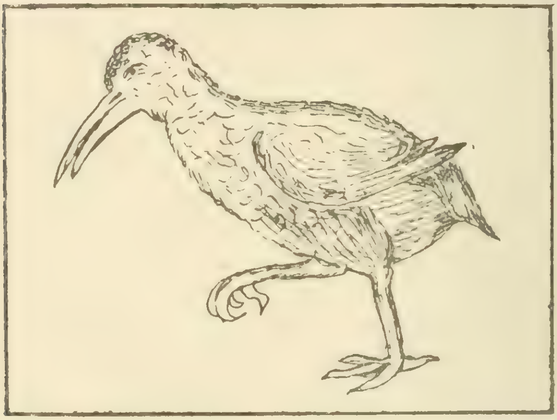
* Mundy is apparently referring to his illustration of this bird.

from St. Lawrence. A Question may be demanded how they should be here and not elsewhere, being so far from other land and can neither fly nor swim, whether by mixture of kind producing strange and monstrous forms, or the nature of the climate, air and earth in altering the first shapes in long time, or how?

Text-figure 5.



Peter Mundy's "Mauritius Hen," copied from the original drawing.

"Other land fowl here of divers sorts, as russet Parrots, large turtle Doves, and many other various in form, colour and bigness; among the rest one as great as a blackbird with a yellow Bill, and a little Bird like a Linnet, with others who would come flocking about us, as wondring at us, so that we struck them down with Sticks in our hands."

Of the Dodo much has been written and published. It probably became extinct about 1680. With regard to the "Mauritius Hen," of which Mundy gives an outline drawing (here reproduced), there can be no doubt that it is the now extinct bird known as *Aphanapteryx broekii* (Schl.).

But little is known of this bird through contemporary writers. It was first mentioned by Sir Thomas Herbert (1606–1682) who travelled to the east in the suite of Sir Dodmore Cotton, accredited Ambassador to the King of Persia, and who visited Mauritius on his return journey. In his work "A relation of some yeares travaile, begunne Anno 1626, etc. etc.," published in London in 1634, on p. 214 is a little picture of "A Dodo, A Hen and A Cacato," but nothing further is said of the bird. Pieter van den Broecke, a Dutch traveller, also figured the bird but gave no description. On this figure Schlegel founded the specific name.

A Frenchman, François Cauche of Rouen, who made a journey to Madagascar in 1638, gives the following account (taken from an English translation of his travels published in 1710):—"In Prince Maurice's Island . . . . as also Red Hens with Woodcock's beakes to take the which they need only to show them a piece of red cloth and they will follow and suffer themselves to be taken by hand. They are as big as our hens and excellent eating."

In 1868 Georg Ritter von Frauenfeld published a reproduction of two pictures on vellum of the Dodo and of the Red Hen. These and other pictures of ornithological subjects were found in the private cabinet of the Emperor of Austria, and were supposed to have been painted for the Emperor Francis I. by the Dutch artist Hoefnagel about 1626. This picture agrees very well with Mundy's description and figure, though the neck is rather longer and more slender.

Some bones obtained from the "Mare aux Songes" in Mauritius about 1868 by Mr. George Clark were examined and described by Milne-Edwards (Ann. Sci. Nat. (5) x. 1868, p. 325). He identified these with the "Mauritius Hen" and placed the bird among the Rails near *Ocydromus*, under the name of *Aphanapteryx broekii* (Schl.). He also gives a very complete account of all that was known about the bird from contemporary travellers and writers.

A further collection of bones from the same locality made by Mr. Théodore Sauzier in 1889 enabled Sir Edward Newton and Dr. Gadow (Trans. Zool. Soc. xiii. 1893, p. 281, pls. xxxiii.–xxxvii.) to add to our knowledge of the osteology of this interesting extinct Rail.

XV.—*Coloration as a Factor in Family and Generic Differentiation.* By Percy R. Lowe, B.A., M.B., M.B.O.U.*.

I should like to state at once that in the few remarks which I propose to make on the subject of to-night's discussion, it is no part of my plan to attempt in any way to upset the established characters and methods which are employed in generic differentiation or to substitute for these some brand-new scheme based on colour-characters. Such a proceeding would be both futile and foolish. All I wish to accentuate is this—that colour-pattern seems to be a very important feature in generic differentiation, which has been, I cannot help thinking, unnecessarily neglected, looked down upon, or ignored. I believe not only that colour-pattern furnishes, in many instances, an important clue to the phylogenetic relationships of various groups of species, but that it would, if properly applied, enable us to get a practical and working idea of the limits of genera.

I believe, in a word, that the employment of the factor of colour-pattern in generic differentiation would act, in many instances, in the way, so to speak, of a control experiment by which we might either substantiate or correct previous estimates of generic groups which have been based on such characters as are usually employed.

Applied in a systematic way to all the genera which exist at the present time throughout the whole class of Birds, I cannot help thinking that many of these genera would be found either to include too many species or too few.

Finally, I do not for one moment hold the view that this factor can be universally applied to all genera, or anything like all; but where it can be used with good results, I can see no possible reason why it should not be applied—and applied, moreover, without fear of laying ourselves open to the charge of mere amateurism.

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* A discourse delivered to the British Ornithologists' Club, February 10, 1915.

Before coming to the more practical side of the subject, it will be necessary to consider it from a general point of view, by way of clearing the ground and of trying to demonstrate how fundamentally important and how deep-seated colour-pattern is—that it is not the superficial and negligible character which it is generally held to be, and that the factors of environment play but a comparatively small and indirect part in its existence. The first point, then, which I should like to lay stress on is:

(1) **The distinction which must be made between "colour-pattern" and mere coloration.**

It will probably be generally admitted that there is a very great difference between the two. Colour-pattern (that is to say, a certain definite and more or less constant relation of colour-factors to certain definite areas of the contour-plumage, occurring through a series of species or genera) implies something of a deeper import than mere coloration—something which from its constancy and persistency, its independence of mere environmental or climatic influences, and its correlation with faunal or geographic areas, appears to undoubtedly suggest the influence of the germ-plasm. If this is so, it obviously follows that the factor of colour-pattern must be of genetic importance. It is heritable. It ought to be, as I believe in many cases it is, a useful phylogenetic guide or clue.

Mere coloration, on the other hand, may, I suggest, be regarded as somewhat akin to mere homoplastic variations or convergent adaptations in the deeper realms of morphology. Regarded in this sense, mere coloration of this kind is of no genetic value. Again, mere shades and tones of coloration, from the fact that they are the result of direct environmental effects or possibly, in some cases, of simple isolation, and moreover are often simply adaptative or procryptic, have likewise no genetic value. They appear to be exogenous in origin, physiological, ontogenetic and non-heritable. It hardly seems worth while to labour these points, but I must give an example or two to clear the ground.

The upper parts of Auks, Guillemots, and Shearwaters, for instance, are some dark shade of slaty-blue or black, and their underparts are white ; and this coloration has presumably been impressed upon them for the sole purpose of harmony with the elements in which they live ; but we may take it for granted that no ornithologist would attach the smallest importance to this resemblance in coloration from the point of view of relationship, or would conceive for one moment that the Shearwaters were related to the Auks—nor would it incline us of itself and by itself to include the Auks and Guillemots in the same genus.

Again, as regards mere depths of tones and shades of coloration, I may remind you, as an example of the superficial nature of such coloration, of the case of the European Goldfinch, which was introduced into the Bermudas somewhere about the year 1870.

These Finches have within this very recent historical period acquired such a very dark tint as regards their upper parts that Mr. Kennedy has not hesitated to differentiate them as a distinct subspecies.

It is very difficult to think that this phenomenon of coloration in the Bermudan Goldfinches is anything else than a superficial, physiological and non-heritable response to a change of environment or to mere segregation. It is a *fluctuational variation.*

But, on the other hand, reverting to the subject of colour-pattern, take the case of the Ringed Plover association. We are all familiar with the very constant type of colour-pattern characteristic of this very widespread and cosmopolitan group. We know that the head and breast of any one species exhibits in a more or less perfect condition a thoroughly stereotyped reproduction of the colour-pattern of any other species, no matter how many thousands of miles of ocean may separate them, and whether those species are found in the old or new worlds, or occur on the mainland or on isolated islands.

I will not detain you with any details of this colour-pattern; but what I want to emphasise here is this—Could anyone seriously imagine for one moment that this particular and constantly occurring colour-pattern was absolutely indispensable for the continued existence of this particular race of Plovers as contrasted with other races of Plovers, and from the point of view of an indispensable harmony with their environment, or ever had been so indispensable at any age or under any circumstances? The mere fact that such a stereotyped pattern is found in such varying types of environment as the peculiar plateau of St. Helena, the grassy velds of southern Africa, or the sandy shores of our own islands, surely suggests that its origin is not entirely a matter of concealing coloration or adaptative. On the contrary, may we not surmise that this particular colour-complex was a character or a colour-tendency which was impressed on these Ringed Plovers ages back, through the influence of some purely fortuitous shuffling of the chromosomes in the germ-cells of some remote ancestor? It is a colour-pattern or a colour-tendency which has persisted, not because it owed its origin to any formal plan for the protective concealment of these Plovers, but because the germ-cell, once started on a certain line, could not help repeating itself in this direction, and because, since the colour-tendency was not harmful to the race, there was no excuse for any eliminating factor to suppress either it or the race; and so the germ-cell, or the jugglery which takes place within it, has gone on repeating itself, and will go on repeating itself, until some sudden mutation or reshuffling of the chromosomes in the germ-cells of any particular individual of any species starts a new line of evolution in colour-pattern (a genetic variation or mutation).

In such a case, then, as the colour-pattern which is typical of the cosmopolitan Ringed Plovers, I submit that we have a colour-complex which is endogenous or genetic. It is congenital. It can be used as a generic test or character. But, of course, we have got to be on our guard in making use of colour-characters in classification; for just as in the case of deeper structural features we have to eliminate the homoplastic factor in cases of mere convergent likenesses, so in the case of these colour-pictures, if one may so term them, it is our business or the business of those who believe in the importance of coloration as a factor in generic differentiation, to distinguish between those which are simply cryptic or concerned in the business of concealment and those which are not so concerned.

One may, of course, have both types of coloration in any particular species. For instance, taking the Ringed Plover group again, no one would deny that the Kentish Plover is protectively coloured in an obliterative direction and in harmony with its usual sandy or arid environments. But this obliterative factor is merely an affair of shades and tones of coloration which are superimposed upon the fundamental colour-pattern characteristic of the genus. The mere depth of tones in desert situations is the direct outcome of the greater intensity of light and the increased aridity, while the tendency of the species in such environments to be invisible is the result of a nicely adjusted process of counter-shading, and both are the result of the reaction of the organism to its immediate surroundings. The fundamental colour-pattern is still there, although modified.

Any organism, in fact, not only reacts to outward stimuli but it has also an inherent power to *act* on, so to speak, its own initiative; and this is a fact that in the matter of this question of coloration we must not lose sight of. The fact that coloration or colour-pattern as a serious aid to classification in birds has been regarded with a certain amount of contempt and suspicion has, I take it, arisen from the supposition that all coloration or all colour-patterns are the direct outcome of the action of external factors—or, to put it shortly, that the coloration of birds is invariably cryptic and a mere superficial response to environment in the direction of enhanced invisibility.

(2) The question of concealing coloration.

Before, however, passing on to the consideration of colour-pattern as a phylogenetic or generic clue, which is the chief point of this discussion, I should like very briefly to notice one or two other aspects of the subject of coloration by way of still further clearing the ground, in the direction of trying to show that colour-pattern in the great majority of cases is endogenous or genetic in origin, and so enhancing its value as a character to be used in classification.

All sorts of pretty theories have been brought forward in connection with this aspect of the coloration of birds; but it seems to me that if concealing coloration was really such a universal phenomenon as it is often made out to be, we ought to find, as a general rule, that there was a far greater, a more universal, and a more intimate commingling of every kind of procryptic colour, irrespective of well-differentiated groups of birds *. Instead of this, we find that certain distinctive colour-schemes are characteristic and proper to certain families or genera of birds, quite irrespective of the fact that such families or genera are exposed to precisely similar environments. To be as brief as possible, one gets the impression, in trying to analyse the colour-factors characteristic of families or genera, that in such groups of birds the ancestral germ-cells had, so to speak, two or three colour-factors to "play with" and make the best of. All the germ-cell or the chromosomes could do was to produce variations with the particular colour-factors they had originally at their disposal. If these variations were not flagrantly inharmonious with their environment, all was well and good.

The accompanying diagram may serve to demonstrate at a glance the idea which I wish to advance. It has reference to the family Drepanididæ of the Hawaiian Islands, and, assuming with Dr. Starr Jordan † that *Oreomystes bairdi* (with its least specialised bill, its wider adaptative powers, its more ubiquitous distribution, and its neutral coloration as regards both sexes) is the most ancestral living representative of this group, we may suppose that this species stands at the point of divergence of the two branches into which this family seems to have split. In the germ-cells of this species or its ancestors there are or were presumably resident three potential colour-factors —red, yellow, and black (this last independently distributed); and out of these, the colour-scheme characteristic of any or all the genera of the family could be constructed by various combinations (in the direction of either addition or loss) of these primary colour-factors. Incidentally, it is somewhat tempting to suggest that there were also two factors for the form and shape of the bill—a *Pseudonestor*-bill factor and a *Drepanis*-bill factor.

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* The colour-pattern of nestling Grebes and Moorhens is conspicuously different, although their environment is identical; and many other examples might be given both in the case of nestlings and adults.

† *Cf.* 'Science,' vol. xxii. 1905, p. 555. In this article Dr. Starr Jordan assumes this for another reason.

In connection with this subject of particular groups of birds having particular colour-schemes, or having particular colour-factors proper to them, Mr. Witmer Stone* has recently called attention to the absence of red among the Jays or of green among the Thrushes. He has also called attention to certain conspicuous colour-patterns which it is difficult to reconcile with any plan for concealment or indeed with any scheme of a breaking-up or ruptive nature. For instance, he quotes the metallic blue or green speculum in the Ducks or the blue and black wing-patch in the Jays.

In making these remarks on this aspect of coloration, I am not, of course, trying to belittle the patent and manifest facts of concealing coloration, which seems obvious enough in certain groups of birds. I am not quarrelling with the theory of countershading as set forth by Thayer†;

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* "The Phylogenetic Value of Colour-characters in Birds," by Witmer Stone, A.M., Journ. Acad. Nat. Sci. Philad. 2nd series, vol. xv. 1912, p. 314.

† If Thayer had done nothing else than accentuate the difference between how we see things with the brain and how we see them with the eye, he would not have written his very instructive book in vain. We have grown so accustomed to habitually see things with the brain that it is only the trained artist who, as a rule, and then only by a certain effort, can switch off his brain and see things *as they really look*, instead of in the way we are accustomed to translate them by means of our brain. Therefore, in thinking of questions like that of concealing-

nor am I saying that the pectoral bands on the breast of the Ringed Plover, or the peculiar pattern on its head, do not serve a useful ruptive purpose in helping to break up the continuity of its form. But what I *am* trying to maintain is that the idea of protective-coloration is a conception or even a hobby which is in danger of being ridden to death—that it is only one phase of the whole question of coloration, and that, taking the class of Birds as a whole, it has probably always been a more or less lucky chance, so to speak, if colour-pattern, born of genetic influences, happened to coincide with such a useful purpose as invisibility or concealment.

The idea in the past was that coloration or colour-patterns were invariably impressed on the bird's plumage from without, and hence systematists fought shy of using such characters in classification. But there is always the other side of the picture, namely, that birds, originally possessed of a certain type of colour-pattern, unconsciously suited themselves to certain types of environment; and if they did not—Well! there was always our old friend Natural Selection in the background and—they *disappeared.*

The Trogons occur to me as a good example of this other side of the picture, because I happen to have made the acquaintance of several species in their native haunts. The Trogon peculiar to Cuba, for instance, is in reality a very conspicuously coloured bird; yet I have found it at times very difficult to find in the forests, although I happened to know that I was within a few yards of one from having heard its peculiar pheasant-like cry. The reason for this

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coloration, we ought not to forget that our "brain-power" is of a very different order to the "brain-power" of a bird or a mammal. It is, for instance, more than possible that birds habitually see things *as they really look.* It is in the highest degree unlikely that the brain of a bird acts in the same way as ours in the direction of transforming the vision of what the eye really sees into a picture of what the brain chooses to think it sees, likes to think it sees, or has grown accustomed to think it sees.

was that the brilliant scarlet of its underparts was apparently confused with the scarlet inflorescence of certain arboreal and parasitic plants which were common. The Trogon had, in fact, unconsciously "adapted itself" to its scarlet-tinted surroundings; for it is to me quite an unthinkable proposition to suppose that these scarlet-coloured epiphytes could by any conceivable means have so affected the germ-cells of these Trogons that they were induced to respond in sympathy with their environment. Yet this is exactly what we are often asked to believe. On the contrary, the germ-cell produced the scarlet area and the Trogon has made, so to speak, the best of a bad job.

(3) The constancy and persistence of colour-pattern.

I have already referred incidentally to this in the case of the Ringed Plovers, in which we find that in spite of extreme isolating conditions and of differences in the type of environment, the fundamental colour-pattern remains the same. Not only is it persistent, but it is more constant than the structural features of the bills, in which we find a whole series of intergradations.

There is another example in the case of three distinct genera of Cuckoos from the East Indies, viz. *Dryococcyx* from Celebes, *Rhinococcyx* of Java, and *Urococcyx* from Sumatra and the Malay Peninsula. I have taken these examples from Mr. Witmer Stone's paper, and it will be noticed that while there are very distinct structural differences in the form of the nostril corresponding to the three genera, the colour-pattern remains the same. It seems to me quite inconceivable that this colour-pattern owes its origin to adaptation with environment, since if we compared the immediate environment of East Indian with, let us say, West Indian Cuckoos, the details would almost certainly be found to be so completely similar that we should expect to find a similarity of colour-pattern and colour-tones, which however and in fact we do not.

We have another instance in the series of the larger

Caciques or Oropendolas of the family Icteridæ*. In this series we have represented five genera, and, from the point of view of the structural features of the bills and other characters, I think it will be allowed that they are five genera as well-marked and distinct as any that could be found in any one group. Yet, as you will notice, the colour-pattern is fixed and absolutely characteristic.

There is another point which I must now briefly notice:

(4) **The correlation of colour-pattern with geographical or faunal areas.**

This seems to me an important side of the question, as not only showing that colour-pattern is a deep-seated phenomenon, but as pointing to the very secondary, if any, part which mere environment has played in its determination.

I propose to take the genus *Cœreba* as an example. Those members who are familiar with South American birds will remember that this genus of brightly-coloured Honey-Creepers can be divided into two groups, namely, a group with white spots on the wings, and a group without white wing-spots.

Here is a map illustrating the distribution of these two races †—the white wing-spotted race being represented in green, and the race without wing-spots in red.

Now, the two areas respectively occupied by these two races of *Cœreba* are, although now connected throughout the greater part of their extent, absolutely distinct in origin, and present entirely different geological features and history. The area coloured red, for instance, represents the extremely ancient and, at one time, insulated Brazilian and Guianan land-masses. It consists of the most ancient rock-systems known—Pre-Cambrian gneisses and Archean schists. On the other hand, the area coloured green consists almost entirely of Tertiary deposits which have been comparatively recently upheaved so as to form the Peruvian and Columbian Andes, the Cordilleras of Venezuela, the Central American mountain ridge, and the interrupted rock-systems of the Greater Antillean islands. The rock-systems of the whole of this green area are, for all practical purposes, in almost complete geological continuity and, as compared with the rock-systems represented by the red area, are things of yesterday.

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* Examples of the following genera were exhibited, viz., *Clypeicterus*, *Eucorystes*, *Gymnostinops*, *Ostinops*, and *Ocyalus*.

† *Cf.* also 'Ibis,' July 1912.

Now, I think it is pretty safe to conclude that the original centre of distribution of the genus *Cœreba* was represented by this red-coloured Brazilian land-mass. This seems indicated by the more generalised, more constant, and less differentiated nature of the colouring and colour-pattern of the race without white wing-spots. But assuming that the old Brazilian land-mass did indeed represent the original centre of distribution of the genus, we find that no sooner did the genus extend its area of distribution to the more recent land-areas, coloured green, than this factor of the white wing-spot became conspicuous and absolutely constant in the new area of occupation. It looks, indeed, as if the potentiality of the germ-cell, in the original and older race, to produce the white wing-spot had been held in check in the old area of distribution, but that the moment migration to a new and isolated area took place, this tendency of the germ-cell was unchecked or given free play. That there was a potentiality in this direction always resident in the germ-cell is, I think, indicated by the fact that every now and then, but still only in quite rare instances, indications of a white wing-spot crop up in the race without white wing-spots. In a large series of 70 specimens, for example, from Matto Grosso, Mr. Allen found a very small percentage.

It may be thought that this is a very long story about a very small thing; because, as anyone can see by examining these *Cœreba* specimens, the presence or absence of a white wing-spot in the two respective races seems a very trivial and almost contemptible circumstance. But it is just for this very reason of apparent triviality that I have used it as an example. For the point is this—could anyone possibly conceive that the presence of this white wing-spot in the one case, or its absence in the other, could serve any useful purpose, or the reverse? Could anyone possibly imagine that the white wing-spot had been directly impressed on the white wing-spotted race through the agency of external factors represented by a difference of environment? The idea is absolutely unthinkable; and the sooner we cease to practise any sort of self-deception in this direction the better. On the contrary, what this story of the genus *Cœreba*, thus briefly condensed, seems to prove is that colour-pattern is a deep-lying phenomenon, an affair of the germ-cell—a congenital manifestation. It owes its continued manifestation after its first inception to the effects of isolation and segregation. As such it cannot be the superficial and contemptible factor which it has been held to be.

I may add that the presence of the white wing-spot in the race inhabiting the green-coloured area is invariably constant, whether species possessing such a spot live at an altitude of 8000 or 9000 feet in the Peruvian Andes, or whether they are found in arid and sparsely vegetated country at dead sea-level, such, for instance, as is found in the very isolated Cayman Islands. In all these species mere depth of tone in coloration is very variable, as we might expect—the fundamental colour-pattern is constant.

To further accentuate the moral of this tale, I have here two pairs of nestling Plovers or Waders. In the one pair you see a nestling Stone-Curlew from our own islands (*Burhinus œdicnemus*) and another from Australia (*Burhinus magnirostris*); in the other pair a nestling Oyster-catcher (*Hæmatopus ostralegus*), again from our islands, and another nestling (*H. palliatus*) from America. In either pair the same identical details of colour-pattern are stereotyped with almost mechanical precision; and we are asked to believe that this precise identity of detail has been stamped upon each particular pair of nestling Plovers by a corresponding precision of identity in the immediate environment representing the respective "birth-places" of either of these two pairs of birds, widely separated as they are in the matter of both latitude and longitude. Even allowing that, in the case of the Stone-Curlews, the immediate environmental details of the Norfolk "Brecks" were precisely identical with those of the "Never Never Lands," or the arid plains of Australia, it is quite beyond our ordinary powers of conception to imagine how such a contingency could possibly have brought about such a marvellous and faithful replica of colour-pattern in two nestling species, separated as they are by the whole vast space occupied by the continent of Asia, and even although we allow an enormous amount of time for the action of Natural Selection in rejecting untold numbers of cases of the "unfit" which would not satisfy the equation.

In a word, it seems quite unthinkable that either environment or Natural Selection, or both combined, could directly affect the action of the germ-cells. We therefore come back to the statement previously made at the outset of these remarks, viz., that the germ-cells are the original designers of colour-pattern, that such colour-patterns are submitted to the approval of a committee formed by environment and Natural Selection, and if passed they persist. The "little by little" theory or the transmission of gradual accumulations of minute and favourable variations, acquired as the result of the influence of external factors during the life of any particular organism, and which favourable variations permit an ascendency over the parent stock, still remains a theory. In practice, we have absolutely no evidence to substantiate it. Even allowing, as seems evident and certain, that certain changes can be produced by environmental effects, "how can we suppose it in the smallest degree likely that very precise new and adaptative powers can be conferred on the germ-cells by such treatment" (Bateson, "Problems of Genetics"). The colour-pattern, then, in these two pairs of nestling Plovers is a deep-seated and important phenomenon. It owes its origin to the independent jugglery which went on in the germ-cells of the ancestral progenitors of the Stone-Curlews and the Oyster-catchers. From the original centre of distribution of those progenitors, the two races spread and radiated to occupy their present areas of distribution. They carried with them the legacy of the ancestral germ-cells.

How little environment has had to do with their colour-pattern, is indicated by the additional fact, that not only is the colour-pattern of the two nestling Stone-Curlews, from the two countries already mentioned, identical in detail, but their characteristic stripes and markings are also, for all practical purposes, identical with the like markings on the two Oyster-catchers already referred to; a fact which may and probably does indicate a community of descent or phylogeny, but certainly cannot be interpreted in the sense that the environmental details proper to these two forms are identical.

Returning however, to the more particular subject of the actual correlation of colour-pattern with geographical or faunal areas, many instances might be quoted. Mr. Witmer Stone has given, for example, the case of the three genera of eastern Cuckoos mentioned above; but I must limit myself here to one other example.

In the genus *Emberiza* we have a group of species (*E. flaviventris, poliopleura, major,* and *cabanisi*) from various African localities which have a distinctive colour-pattern, in which the factor of yellow is very prominent. In east Siberia, Manchuria, and Japan, we find two species of *Emberiza* (*E. elegans* and *chrysophrys*) in which although yellow plays a part, the colour-pattern is distinctly differentiated from the above. Both these groups are in turn differentiated from another group comprising such species as *E. cia, cioides, castaneiceps, ciopsis,* and *stracheyi.* My contention is, that the colour-pattern characteristic of such groups, not to mention others, must have a distinctive genetic import, which is independent of environmental effects and for which we ought, incidentally, to have some method of expression in our system of classification. We must in classification, work our way down to such natural compound units. (In this connection, see also remarks under

"The relationship of colour-pattern to genera-splitting and genera-lumping.")

Finally, so far as general considerations go, there is the question of

(5) The relationship of colour-pattern to sex.

It may be argued that the fact that the male is so often more brightly coloured than the female, is a difficulty which lessens the value of colour-pattern as a factor in generic differentiation. The female, too, as we all know, may in certain instances usurp the brighter plumage of the male. Mr. Rothschild has given me an instance, in the case of the genus *Oreomystes* of the family Drepanididæ, which he considers an example of the difficulties of applying the factor of colour as a generic character.

In *Oreomystes*, while the rule is that both male and female are green, we find in *O. flammea* that the male is all red and female not all red. Well, it seems to me that as far as I understand the problem, the fact that the male generally has a brighter and different colour-pattern from the female, or that the female may take on masculine characters, or that in any given genus the male of certain species may be found with an exceptional type of coloration, proves very little more than this, viz., that, for some reason or other, some restraining factor which, as a rule, is operative in the female is not so operative in the male.

The fact that, in one species of the genus *Oreomystes,* the males are red instead of green simply points to the fact that in the *Oreomystes* germ-cell there was always a latent combination of factors, which at any moment might produce the factor of red, if given the chance; and I have already spoken of the way in which in certain families or groups of families we seem to see two conspicuous and contrasted colour-factors, or perhaps more than two, which are constantly turning up in the species of the group.

The moral seems to me to be that we must ignore the colour-factors of the male, or of the female if she has assumed masculine attributes, and take as our pattern the ancestral type of colour-picture, which is either generally fixed in the female or in the immature. From these general considerations, I now come to the more practical side of the question of colour-pattern as a factor in generic differentiation, and one of the points in this connection is :—

(6) **The correlation of colour-pattern with other generic characters.**

This point I shall dispose of very briefly, as it is so obviously self-evident, and my time is so short that I do not want to waste it in proving something which anyone can see by opening a series of drawers in the cabinets of the British Museum.

I do not say that colour-pattern is invariably so correlated, but, whether colour-pattern is used as a factor in generic differentiation or not, it is as a fact correlated in such an enormous number of instances that one cannot help being impressed. Consciously or subconsciously systematists seem in fact to have been guided by it.

Let me tell you the following story in illustration of this point. While looking for some good examples of this correlation of colour-pattern with generic groups, Mr. Ogilvie-Grant was kind enough to direct my attention to the Babblers—the Crateropodidæ.

I knew absolutely nothing about this group of birds, so that it is fair to say that I came to their study with no preconceived ideas on the genera. I approached the subject entirely from the point of view of colour-pattern, my only aids being the 'Catalogue of Birds' and Oates's well-known work. So far as my examination extended, I took as a pattern the type of each genus from the 'Catalogue of Birds,' and with those to guide me made a list of all the species which I considered ought to be included in each respective genus on colour-pattern alone. The result was that, so far as Indian birds were concerned, my genera were, as regards species, practically identical with Oates's. On the other hand, as regards the 'Catalogue of Birds,' I found myself constantly in disagreement. I found, for instance.

that a good many species which I should have thought worthy of generic distinction, from the point of view of colour-pattern, were not so considered in the 'Catologue of Birds,' but were included with other genera with a perfectly different colour-pattern. Well! to make a long story short, if Oates had not made new genera for these distinctively coloured species, someone else had.

Mr. Grant tells me that this group of birds used to be considered the dumping-ground for all doubtful forms whose classification presented difficulties—a sort of waste-paper basket for puzzled or beaten ornithologists. He has kindly allowed me to bring up a few examples* from this very interesting rubbish-heap, and from them I should be happy to demonstrate to anyone later on the efficacy of colour-pattern as a factor in generic differentiation. Time is too short now to give more examples, but there is a point which I should like to make here. It is this—that as a general rule there is nothing like so much intergrading between colour-patterns characterising genera as there is between such structural generic characters as the form and shape of the bill, the tail, or the wing. And this is just what we might expect; for naturally a highly specialised organ like the bill is constantly subject to minute structural changes in accordance with the functional uses to which it is put, and in correspondence with the type of insect-prey or other food which its owner is accustomed to capture or to feed upon.

Species are founded on colour, and one of the things which apparently we must not have is intergrading of the colour-factors characterising them. In genera, intergradations in, let us say, the form of the bill are apparently admissible. I give you as examples the variable form of the bill in the genus *Tringa* (the Redshank association), in the genus *Erolia*, or in the genus *Geospiza* from the Galapagos Islands, as now comprehended by Mr. Rothschild and Dr. Hartert.

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* Examples of the following genera illustrating the subject were exhibited:—*Minla*, *Schœniparus*, *Pseudominla* (*Psittiparus*), *Lioparus*, *Yuhina*, *Ixulus*, *Alcippe*.

But why, I ask, fight shy of the very constant and congenital colour-pattern, so conspicuously characteristic of such genera as I have mentioned, and swallow the very variable structural forms of the bills, which have been impressed upon these various Eroliine or Tringine species through purely functional causes. Which is the oldest, the most constant, and the most fundamental character? Which is the most reliable character for the purpose of classification—one which had a direct and obvious relation with function, or one which had not such an obvious relation?

We get out of this dilemma by regarding the variations of the bill in the genera just noted as specific. But are we justified? I do not say we are not—but are we?

As a matter of fact, as I shall indicate later, my sympathies are, in many instances, with the lumper, but lumping genera on too large a scale may, perhaps, be almost as inexpedient a proceeding as splitting on too large a scale. To this subject, however, I shall return later.

(7) Colour-pattern as a phylogenetic clue.

In this connection, as is only natural, we turn to a consideration of the colour-pattern characterising the immature or nestling examples of any particular group selected.

I have here a very fine series of the nestling downy young of the Dunlin association—the subfamily formerly known as the Tringinæ, but for which I presume to think the term Eroliinæ might now be substituted, since the name Tringinæ is, by those who apply the principle of Linnean tautonymy, ruled out of court. As far as it goes, and I think it goes a very long way indeed, the colour-pattern common to all these nestling species serves as an excellent control experiment, whereby we are able to judge of the exact limits of the Eroliine subfamily. This colour-pattern, which I have not time to describe—you can see it for yourselves,—appears to be absolutely diagnostic of the subfamily. In it, we have a phylogenetic clue, pointing to the fact that in the Eroliinæ we have a very definitely differentiated group.

Compare this colour-pattern with the colour-pattern so very characteristic of the downy nestlings of the Redshank association—the Tringinæ,—and you observe at once a marked distinction. In the one case you have a spangled colour-pattern, in the other a striped one. I might add that in both series you have specific colour-tones superimposed on the fundamental subfamily colour-pattern. Incidentally, too, we glean that the Snipes are an offshoot from the Eroliine branch, while the Phalaropes are closely allied to the Redshank branch, as I have endeavoured to demonstrate by means of this diagram which I have drawn.

Here, again, in this box we have a series of downy young whose colour-pattern seems to be absolutely diagnostic of the Ringed Plover group or of the genus *Ægialitis*. This is what may be called a "True Plover" colour-pattern. Perhaps I can better explain what I mean by referring you to this diagram, which is a rough attempt to depict in a sort of bird's-eye view the phylogenetic relationships of the whole group of Waders. You will notice, for instance, that I have represented the main Limicoline stem as dividing into two branches—a Pluvialine branch and a Scolopacine branch. In the members of the Pluvialine or True Plover branch, we find the end of the bill, both in adult and nestling, ending in a distinct dertrum. In the Scolopacine branch there is no hint of a dertrum either in young or old. Corresponding with these distinctions, the colour-pattern characteristic of the nestlings of either group presents a well-differentiated colour-picture.

The Pluvialine branch, you will also notice, splits again into the Charadriinæ and the Vanellinæ (Lapwings and Wattled Lapwings), and if you compare the nestling young of these two groups you will again find a distinctive colour-pattern. For instance, the Ringed Plovers (*Ægialitis*) are differentiated from the Vanellinæ by not presenting a conspicuous pectoral band and by other minor points which I cannot now dwell on. But here you have two or three examples of the Vanelline subfamily.

But, it may be asked, of what practical use are all these facts, so far as they seem to go?

Well! Here is one example of how the colour-pattern and general appearance of the downy young may appear to settle once and for all a debatable point in generic relationship.

You will find in this box a nestling of a so-called Ringed Plover from Australia. In any of the classical works or catalogues you will always find this species included at the end of the list of species presumed to belong to the genus *Ægialitis*. The species I refer to is *Elseyornis melanops*, and, if you examine its nestling, I think you will agree with me that it certainly does not belong to the genus *Ægialitis*, but is worthy of the generic distinction which has been recently bestowed upon it.

Here is another instance, namely the downy young of *Oreophilus ruficollis* from southern South America. Dr. Bowdler Sharpe included the genus *Oreophilus* with the Wattled Lapwings; but if you compare this nestling species of *Oreophilus* with the nestlings of the Wattled Lapwings in this box, I think you will come to the conclusion that, whatever else this interesting and aberrant form may be, it is not a Wattled Lapwing. The colour-pattern is suggestively Eroliine, and the natural conclusion seems to be that *Oreophilus* is an aberrant Dunlin*.

The Ruff (*Machetes*), again, was placed by Bowdler Sharpe with the Tringinæ (Totaninæ olim), but the colour-pattern of the downy nestling is undoubtedly Eroliine in type, as anyone may see for himself by looking at the example in the front hall of the Natural History Museum at South Kensington, and comparing it with the type of colour-pattern characteristic of the Eroliinæ. The colour-pattern of the tail, tail-coverts, and rump in females and immature birds is also Eroliine—this diagrammatic drawing representing what I mean by the colour-pattern typical of the Eroliinæ. Judging, too, by this last character, *Micropalama* is Eroliine, while *Macrorhamphus* is Tringine.

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* I am free to confess that there are almost, if not quite, as good reasons to look upon it as an aberrant Dotterel (*Eudromias*).

Again, the nestling young of *Chionis*, *Dromas*, *Œdicnemus*, *Hæmatopus*, *Recurvirostra*, *Thinocorus*, *Jacana*, and *Rhynchæa*, among others, are all extremely interesting from the point of view of the true phylogenetic relationships of these forms.

In attempting to construct this "family-tree" (exhibited at the Meeting), which purports to depict the phylogenetic relationships of the whole suborder of Waders, a study of the osteological characters of this group has been carried on simultaneously with a study of the nestling young (not to mention other aids to classification)—the result being that these two aids to the whole question of phylogeny have illuminated one another in the most interesting way.

But I must now hurry on to other groups of birds.

Here, for example, are some nestling Ducks of various genera, and, though I cannot pause to describe them individually, I may point out the very typical, constant, and well-differentiated nestling colour-pattern characteristic of such genera as *Tadorna*, *Glaucion*, *Nyroca*, *Œdemia*, and *Anas*—incidentally demonstrating to you how impossible it would seem to unite *Glaucion* and *Nyroca* under one genus, as has been recently done, or, on the other hand, to include the Ruddy Sheld-Duck in a genus (*Casarca*) distinct from *Tadorna*, since the colour-pattern characteristic of the nestling plumage of the Ruddy Sheld-Duck is identical with that of the Common Sheld-Duck. One may sum up by saying that the colour-pattern in the nestling Duck seems an even better guide to the differentiation of really natural generic groups than the colour-pattern in the adult, which last in its turn seems of more reliability than the generic characters usually depended upon.

Passing to Passerine examples, Mr. Swynnerton has kindly drawn my attention to the very suggestive resemblance which immature examples of *Tarsiger* bear to the young of *Erithacus*, as instanced in our own Robin. Here are some examples for comparison; and I think it might be held that the resemblance is even more than suggestive. *Tarsiger* at the present time is grouped with the Flycatchers, but it has Robin-like habits, and the types of colour-pattern of immature examples are so Robin-like that I think its position might well be reconsidered*.

Pœcilodryas is another genus included with the Flycatchers, but the young nestling of *P. capito*, with its very curious colour-pattern and aberrant feathering, is not in the least reminiscent of the young of this group. It recalls the fluffy plumage on the back of the adult *Corythocichla*—the Fluffy-backed Babblers. The young of *P. albifacies* presents the same peculiarities. The resemblance is so striking that it seems to me we might well ask ourselves—Is *Pœcilodryas* a Timeliine genus or a Flycatcher genus?

Again, it may be recalled that *P. æthiops*, from New Guinea, has always been included in the genus *Pœcilodryas*, although it bore the most suggestive resemblance to *Saxicola caprata* from India. Dr. Hartert has now removed it from its former genus to the genus *Saxicola*. Is it possible that in doing so he was in any way influenced, either consciously or sub-consciously, by the factor of colour-pattern?

In the case of *Pachycephala*, a genus belonging to the Laniidæ or Shrikes, we have an instance of the colour-pattern in the female giving a clue to true phylogenetic relationship: for *Pœcilodryas caniceps*, which was formerly regarded as a Flycatcher, we now find to be nothing more than the female of *Pachycephala gutturalis* (*P. obscurior* of Hartert). Was colour-pattern a negligible factor in arriving at this conclusion?

I might add that the young of *Pachycephala rufinucha gamblei*, from New Guinea, are well worth looking at from the point of view of phylogenetic relationships.

(8) The relationship of colour-pattern to the question of genera-splitting or genera-lumping.

In reality, the consideration of this aspect of colour-pattern follows naturally on the heels of the last, and, in effect, the few remarks which I shall have time to make will take the form of a plea for some method by which we could combine genera, with the result that we should be able to recognise larger natural or phylogenetically allied groups, genetic phyla, super-genera, or whatever term we might like to apply to such groups. This, I think, could for the most part only be done by a systematic study of the colour-patterns characteristic of *immature* examples of whole groups of birds. Witmer Stone, in America, has already put in a plea to this effect. Briefly stated, my reasons for this plea are as follows:—

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* Since this paper was read my attention has been drawn to the fact that Mr. Oberholser had already noted the same point (*cf.* Proc. U.S. Nat. Mus. 1915).

As things are now, in by far the larger number of cases, genera are purely artificial, arbitrary, and non-natural* groups which have been constructed for our convenience. They have, in fact, been constructed in order to simplify and codify our general concept of any particular family of birds.

Unfortunately, unless we simultaneously employ some method of integrating minor generic groups into larger and naturally constructed super-generic phyla, there seems to be a danger that, in the multiplication of genera which is now going on, our concept will be—not simplified, but complicated and obscured. For all practical purposes, we shall, in fact, have arrived by a laborious and painstaking process at the exact position from which we originally set forth. We shall indeed have been perambulating a circle; for we have only got to imagine the process of genera-splitting carried a few more steps further on and we shall have arrived at such a pass that all genera will have become *monotypic*. This may seem to be an exaggerated picture of the position, but if colour-pattern is really and truthfully ignored in generic classification—as systematists assure us—a flood of monotypic and quite artificial genera is not an unlikely eventuality, so fine are the distinctions now drawn between trivial variations in the structure of the bill and other organs. If, on the other hand, colour-pattern is not ignored, genera-splitting is far less likely to do harm, and indeed is likely to be productive of much good, for we shall have got down to small groups of natural and genetically related species. These minor generic groups would in fact in most cases be found to consist of analytical varieties grouped around some central or dominant specific type. They would be really natural units which when integrated with others into larger and still natural groups (super-genera or what not) would express at a glance the phylogenetic natural relationships of the particular family or subfamily we were dealing with.

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* In the discussion which followed the reading of this paper, much was made of the idea that genera were non-natural, man-made and purely convenient groups. If however the units (species) of which genera are composed are natural, nature-made units, surely groups comprised of such units ought to be natural if only such units are properly assorted. If genera are not natural (and there is no question that many of them are not), that is the fault of those who created them—not Nature's. Personally I believe in groups of species which are genetically allied, that is to say I believe that Mr. Iredale struck the right note when he said that genera were or ought to be as natural as species.

My point, therefore, is that while disintegrating within justifiable and natural limits we should at the same time integrate on the above lines.

Take, for example, the Redshank association again. In this group, so variable are the structural features of the bill and other anatomical features that almost every species could conceivably be made the type of a distinct genus; and the same might be said of the Dunlin association. Colour-pattern saves the situation.

Take, again, the case of the Ground-Finches of the Galapagos, famous for their association with Darwin's original conception of the origin of species! Mr. Rothschild, in conjunction with Dr. Hartert in a recent review of these Finches, has integrated them into one genus, *Geospiza*, sinking the three other genera (*Cactornis, Camarhynchus*, and *Platyspiza*) on account of the complete series of intergradations in the form of the bill which they allege to exist. Incidentally they hold that there are 34 species and subspecies of these Finches, while Mr. Ridgway maintains 35—in spite of the fact that there are only some 14 islands in the whole group, and that Duncan Island, which has a superficial area of some 12 square miles only, is found to contain no less than 10 of these species.

To me, with my limited experience, such a state of things seems to be rather shattering to one's preconceived ideas on the subject of species and their distribution. I have recently spent a considerable time over this group, chiefly from the point of view of colour-pattern, and my conclusion derived from this source is—that not only is there but one genus, as is maintained by Messrs. Rothschild & Hartert, but that there are but three or four species, instead of 35, and that these species were polymorphic. One of the things I did was to segregate all the examples of the ten Duncan Island species into one box, and then examine them from the point of view of intergradations in the form of the bill and colour-pattern. It was an interesting experiment, and, as I say, the only conclusion one could come to was the polymorphic nature of the two or three species, although it is conceivable that one or two forms may become, or are becoming, dominant, and may eventually become fixed.

I have instanced this case of the genus *Geospiza* because of the perfect series of intergradations in the form of the bill which are alleged, and because from that fact the common-sense view seems to be that we are here justified in lumping. On the other hand, here are three Icterine genera, *Trupialis, Leistes,* and *Sturnella* (or if we fight shy of *Sturnella*, let us say there are only two genera, viz. *Trupialis* and *Leistes*). Now in these genera there is a break in the continuity of intergradations in the form of the bill, and because of this break the rule is to consider these two forms as generically distinct; and here my point, which I fear is rather belated, comes in. If we examine immature specimens of these two genera, not only do we find the form and shape of the birds to be identical and with no break, but the colour-pattern is also identical; and the same may, I think, be said of *Sturnella*.

We have, then, in the colour-pattern presented by the immature examples of these forms a phylogenetic or generic link, yet, in the 'Catalogue of Birds,' *Leistes* is put into a distinct subfamily away from *Trupialis*. My point, therefore, is this—Can we not and ought we not to make use of such a link, or, rather, ought we not to have some way of expressing it so that we may be aware of it?

I am not advocating a policy of sinking or ignoring genera where obvious generic distinctions exist. That would, I think, be a very dangerous and regrettable policy. But I do think we ought to have some method of emphasising generic relationships *inter se*, by way of combining them into groups.

It may be answered that subfamily divisions already do this. But take the case of these five genera of the larger Caciques or Oropendolas. Here we have a very distinct group of the Icteridæ, well differentiated as regards structural generic characters, as regards specific characters, and as regards habits. For instance, in connection with the last, the Oropendolas only rear one chick, which presents peculiar characteristics, and it is only on very rare occasions that two eggs are found in their very peculiar nests.

They form, therefore, as I have said, a very distinct group, but, at the same time, it has been generally held by recent systematists that it is impossible to subdivide the family of the Icteridæ into subfamilies.

The obvious or logical conclusion, therefore, is that we ought to more often make use of super-genera by way of expressing or emphasising the near phylogenetic relationships of groups of genera.

That any real progress in this direction is retarded or rendered practically impossible is due to the fact that at present it is only on very rare occasions and quite sporadically that we find nestlings or immature examples of species represented in our collections.

Finally, if colour-pattern is going to be applied as a generic factor on anything like a large scale, it will, I am afraid, be found necessary to create many more genera or subgenera than exist now. But why not, if, and so long as, these genera or subgenera were found to be natural groups, corresponding, as I have found in many instances they do, with faunal areas or geographical regions or subregions; and if, and so long as, such subgenera or genera are integrated into larger natural groups, genetic phyla, or whatever term is employed, so that we may be aware of their natural relationships. These minor groups of birds are not like stamps, which are to be arranged methodically in an album. We have not finished with them when we have cleverly elaborated a system which ensures that we shall know exactly where to find them in the cabinets of a museum. On the contrary, they are natural groups of organic creations with independent organic histories and origins, with independent or particular areas of distribution, and doubtless with independent ecological life-stories. Are such things expressed or implied when we find in a recent and colossal work that no more can be done with a huge family like the Icteridæ than to write it down as one long continuous and tremendous list of genera, without analysis, without subdivisions or divisions, without a hint as to phylogenetic relationships or diversities, without an indication that, for all one can tell, judging solely by this method of classification, the first genus may not be closely allied in all respects with the last?

XVI.—*Mixed Bird-parties.*

By C. F. M. Swynnerton, C.M.B.O.U.

The occurrence of mixed bird-parties in the British Isles tends, I think, to escape notice to some extent through the fact that the intervening spaces are well filled up by scattered birds that are searching for their food independently.

In south-east Africa, through the relative scarcity of intervening birds, they are far more conspicuous, and they would appear to be equally so in portions of South America, to judge from Bates's fascinating description of "the associated bands of insect-eaters" of the forests of the upper Amazons. Here "numbers of distinct species, belonging to many different families, join together in the chase or search for food"; and "One may pass several days without seeing many birds; but now and then the surrounding bushes and trees appear suddenly to swarm with them. There are scores, probably hundreds of birds, all moving about with the greatest activity—Woodpeckers and Dendrocolaptidæ (from species no larger than a Sparrow to others the size of a Crow) running up the tree-trunks: Tanagers, Ant-Thrushes, Humming-birds, Flycatchers, and Barbets flitting about the leaves and lower branches. The bustling crowd loses no time, and although moving in concert, each bird is occupied, on its own account, in searching bark or leaf or twig. . . . In a few minutes the host is gone and the forest path remains deserted and silent as before. . . . Sometimes stray birds, encountered in the line of march, are seen to be drawn into the throng, and purely frugivorous birds are now and then found mixed up with the rest, as though led away by some will-o'-the-wisp. . . . The simplest explanation appears to be this: that the birds associate in flocks from the instinct of self-preservation, and in order to be a less easy prey to hawks, snakes, and other enemies than they would be if feeding alone" *.

Marshall, in his "Notes on Mashonaland Birds" (Ibis, 1900, p. 222), writes:—

"A fact which must impress every observer is the way in which one may often walk for several miles through likely-looking country and scarcely see a bird; then suddenly one comes upon a troop of them, composed of Drongos, Tits, small Shrikes, Flycatchers, Warblers, and Buntings, keeping more or less together in a limited area. Personally I have no doubt that this may be attributed to the large number of birds of prey which occur here; so that the smaller birds find it advisable to associate as a means of protection, the Drongos acting as a sort of body-guard."

I myself in my early notes "On the Birds of Gazaland" (Ibis, 1907, p. 34) wrote with regard to the same phenomenon:—

". . . . Though the habit is undoubtedly a great protection to the weaker species, and has evidently reached its present high development as a result of this, yet the fact that the small birds peculiar to the forest—the canopy and dense undergrowth of which ought to afford ample protection from the Hawks (and Hawks are in fact scarce in

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* 'The Naturalist on the Amazons,' vol ii. pp. 334-6, 1863 edition.

this district as compared with the neighbourhood of Salisbury)—also possess this habit . . . . appears to me to indicate that it is due in part to mere social instinct."

Sociableness, drawing the stray birds encountered into the passing throng, as Bates suggested, may account for the inclusion of purely frugivorous birds in these parties (if indeed they were not the nucleus round which the throng first formed), but neither this nor mutual protection nor protection by the Drongos now seems to me to be the *sole* objects of these mixed parties. I have during the past few years given much time to accompanying and closely watching such parties, and I have been led to believe, in common doubtless with numerous other observers, that their main function is co-operative hunting. They are probably *drives.*

The following is an instance from my journal in Gazaland:—

"April 18, 1911. Entering the forest, I found myself in the thick of a large 'Drongo's hunting-party.' The birds had been quite undisturbed by my arrival and I was able to see within a few feet of myself a good deal of what was going on. The party was doing its work in nearly as close formation as I have seen, and from the ground to a height of 50 feet or more all was bustle and excitement. The twigs were everywhere vibrating and the foliage rustling with the movements of birds, scraps of bark and dry leaves were everywhere falling, and every now and then I was fortunate enough to witness an obvious attack on some flying or falling insect, often invisible to myself.

"The Bristle-necked Bulbuls (*Phyllastrephus capensis*), a large party of them, worked, as usual, below. They carefully searched not only the ground, knocking the dry leaves from side to side with their bills, but also the branches and foliage of the large shrubs forming the undergrowth. Amongst them I once for a minute or two caught a glimpse of a small family party of our common forest *Erithacus.*

"Next above came the Barratt's Bulbuls (*P. flavistriatus*), a very large and scattered party or parties comprising probably not fewer than forty or fifty individuals in all. This party seemed to make it its business, in ones or twos or threes, to search every inch of each trunk, each twig and each bunch of foliage from above and from below, from the Macrorungias inclusive up to the full height of 50 feet—perhaps higher, could I have seen further through the masses of foliage. They were probing crannies, picking loose scraps of bark from trunks and dead twigs, searching the dense green moss on the rainy sides of the former, deliberately shaking dead leaves or peering into their curled-up recesses and keeping the foliage generally in that continual rustle of movement to which I have already alluded.

"With the Barratt's Bulbuls, but usually just above and to the side of some small working party, were a pair of forest Drongos (*Dicrurus ludwigi*) and of White-spotted Flycatchers (*Trochocercus albonotatus*). The Flycatchers were continuously on the move; when not watching the beaters and capturing what they put out (several attacks on minute flying objects within two or three feet of working Bulbuls were presumably of this nature), they kept flying off at small insects in mid-air or moving restlessly from twig to twig, often with the quaint tail-display they are so addicted to, and frequently removing small objects from the upper or under surfaces of leaves. They thus themselves took some small share in the 'beating.'

"The Drongos far less: they confined themselves almost entirely to taking insects on the wing, several times dashing to within a foot or two of a 'beater' in pursuit of some object flushed by him. The only victim that I could definitely identify was a beetle, probably an Anthribid, that had been dislodged by a Bulbul and was falling to the ground when it was dexterously snapped up by a Drongo and carried to his perch nearly above my head. . . . . Later on, two Barratt's Bulbuls fell headlong in pursuit of an object dislodged by one of them, and one of the Drongos joined in. The object of their pursuit, whatever it was, reached the ground and one of the Bulbuls remained to search, while a third, from elsewhere, came and hovered over the spot for a few seconds, the Drongo and the second original Bulbul returning to their previous occupations. On no fewer than seven separate occasions (including the one already described) I saw an insect or other object of interest to the birds fall to the ground in this way, having been dislodged by one or other of the Barratt's Bulbuls. On each occasion from one to three of the Bulbuls—occasionally fairly widely separated birds—dashed after it, and one or more, twice with the unsolicited assistance of a member or members of the *P. capensis* party, remained to search for it on the ground. Once I saw a *P. flavistriatus*, after rising from such a search, batter something against a twig, but on the remaining occasions I was unable to see whether the birds were successful or otherwise. I was interested to see (1) that the Bristle-necked Bulbuls do not render their services as beaters for nothing; they evidently attempt to annex some at least of the crumbs that fall from above: and (2) that the trick of falling inertly to the ground practised by so many beetles, spiders, etc., and often so disconcerting to the naturalist, is not necessarily final as against birds of the 'searching' class.

"Once a 'Barratt' flew across a small open space, drove off a *Trochocercus* and took some small object from a leaf just in front of it. Another time a bird of the same species flushed and went after a small flying insect, but was at once joined in the pursuit by its next door neighbours of two or three feet away. One of them captured it in the air.

"A female *Batis erythrophthalma* remained more or less in sight for about ten minutes; I could hear another singing in the foliage some distance off. She, like the Drongo and the White-spotted Flycatchers, spent quite a good deal of her time in watching the Bulbuls, though out of two or three objects seized by her in mid-air I am unable to say that any came from these birds; they were too small to see at all. Four times I saw her fly up and pick some insect from the underside of the leaves above her.

"A party of three or four *Apalis chirindensis*, searching closely high in the foliage, and a single *Cinnyris olivacinus*, were the only other birds seen; but the forest

Weaver, *Sycobrotus stictifrons*, a bird that is largely insectivorous and a close searcher, was several times heard. The Sunbird was picking small insects off both the upper and under sides of the leaves, sometimes perched on or hanging from the twig, at other times hovering in the air in front of the object desired. . . ."

The above description is of a very typical though incomplete mixed party of the forest. Probably still higher in the foliage and unseen by me on that particular occasion would have been the small Warblers, that are so commonly attached to these parties. A full list of the birds seen composing the forest-parties in Chirinda is roughly as follows:—*Dicrurus ludwigi* (Smith), usually a pair to a party; *Sycobrotus stictifrons* (Fischer & Reichw.), *Phyllastrephus milanjensis* Shelley, *Batis capensis erythrophthalma* Swyn., *Trochocercus albonotatus swynnertoni* Neum., *Trochocercus bivittatus* Reichw. (rare), and *Graucalus cæsius* (Licht.), a pair or occasionally two pairs of each; *Cinnyris olivacinus* Peters, and *Campothera abingdoni* (Smith), occasionally a pair; *Smithornis capensis* (Smith), occasionally, and *Erithacus swynnertoni* Shelley and *Tarsiger stellatus* (Vieill.) (somewhat rarely, I think, and probably usually only for a limited distance); *Apalis chirindensis* Shelley, and *Phyllastrephus capensis* (Swains.), in small or large parties—the numerous very small birds usually seen in the higher branches include the former species, also *Zosterops anderssoni* Shelley (in large or small parties), *Chlorodyta neglecta* Alexander, *Cryptolopha ruficapilla* (Sundev.), and, I believe, *Phylloscopus trochilus* (Linn.), when with us. Finally there is the mainstay of the party, *Phyllastrephus flavistriatus* (Sharpe), present often in very great numbers. All these birds except the Drongos and Flycatchers are searchers.

On the outskirts (and for a very short distance into the forest) and in smaller, lower, or somewhat less dense forest-patches, as also often on the tree-tops and in open places in Chirinda itself, the following species attach themselves to these parties:—*Dryoscopus cubla* (Shaw), *Laniarius bertrandi* Shelley, *L. olivaceus* (Shaw), *L. manningi* Shelley, *Apalis* *thoracica* (Shaw & Nodder), *Campephaga nigra* Vieill., *Barbatula bilineata* Sundev., *Cinnyris venustus niassæ* Reichw.—in each case singly or in pairs, or at most in small family parties; and, in family or larger parties, *Zosterops anderssoni*, *Anthreptes hypodilus* (Jardine), and *Pycnonotus layardi* Gurney.

On the other hand, in the "wooded pastures" (Welwitsch's description, and quite the best I know for what Marshall calls "open forest") the Drongo is *Dicrurus afer* (Licht.), not *Dicrurus ludwigi*, and the other birds of the assemblage are:—(1), in more or less large parties, *Sigmodus tricolor* (Gray), *Prionops talacoma* Smith, *Crateropus kirki* Sharpe (equivalent in its duties to *Phyllastrephus capensis* in the forest), *Eremomela scotops* Sundev., *Irrisor erythrorhynchus* (Lath.), and sometimes *Pycnonotus layardi*; (2), in pairs or small parties, *Pycnonotus layardi*, *Emberiza major orientalis* (Shelley), *Parus niger* Bonn. & Vieill., *Nilaus brubru* (Lath.), *Dryoscopus cubla* (Shaw), *Sylviella whytei* Shelley, *Prinia mystacea* Rüpp., *Alseonax subadusta* Shelley, *Batis molitor* (H. & K.), *Bradyornis murinus* Finsch & Hartl., *Graucalus pectoralis* Jard. & Selby, *Lophoceros melanoleucus* (Licht.), *Campothera bennetti* (Smith), *Dendropicus zanzibari* Mahl., and *Barbatula extoni* Layard (actually shot); (3), occasionally found, *Oriolus larvatus* Licht., *Hyphantornis nigriceps* Layard (near its haunts), *Sitagra ocularia* (Smith), *Estrilda kilimensis* (partly insectivorous), *Cinnyris niassæ* and *C. chalybæus* (Linn.), *Laniarius starki* Scl. f., *Telephonus senegalus* (Linn.), *Turdus tropicalis* Peters, and *Rhinopomastus cyanomelas* (Vieill.); also (purely frugivorous) *Colius striatus minor* Cab., and *Gallirex porphyreolophus* (Vigors), and (graminivorous) *Chalcopelia afra* (Linn.). I have also found *Campephaga nigra* Vieill., *Bradyornis ater* Sundev., and *Heliolais erythroptera* (Jard.), in these parties. Their most constant members, actually, are *Dicrurus afer*, the Helmet-Shrikes, the *Crateropus*, *Batis molitor*, *Bradyornis murinus*, and *Graucalus pectoralis*.

Each party has its special area of forest or wooded pasture which it may be found driving systematically daily, 100 to 200 acres or so to a party I should guess for Chirinda, far more in the less densely-wooded country.

Gregariousness in a species is primarily, of course, the result of quite other factors than the need for co-operative insect-hunting, as witness the flocks of seed-eating birds. But one notices that the members of family parties of all kinds of insectivorous birds play greatly into each other's bills, and instances of more highly organized co-operation are afforded by such birds as *Creatophora carunculata* (in its locust drives) and *Bucorax caffer*. My two tame individuals, of the latter species whose habits I recently described in the S. A. O. U. Journal (vol. ix. 1913, p. 83), would stalk along side by side at some little distance apart and attack such insects as were flushed by either of them in the direction of the other. And I have watched parties of as many as four of the wild birds of the same species doing the same thing.

This is co-operation pure and simple. The next step is to have noticed that other species of birds (like grass-fires) tend, in rummaging about, to put up insects, and to attach yourself to them when you see them thus promisingly engaged. The following extracts from my bird-diary are typical of what I have frequently seen :—

"April 8, 1911.—. . . . In the guavas was a party of not fewer than a dozen Bulbuls (*Pycnonotus layardi*) moving actively all over the bushes and pecking at the ripe guavas; outside, hawking backwards and forwards over and round the bushes and evidently, with the Bee-eater, snapping up such flying insects as were dislodged by the Bulbuls, were five or six Swallows (*Psalidoprocne orientalis*). Only one of the insects captured was large enough for me to distinguish. It was either a common yellow-legged wasp (*Scolius* sp.) or some black-winged species closely resembling it in appearance. It flew from the Bulbuls and was at once snapped up by the Bee-eater. The line of guava-bushes is divided into two by a considerable gap, and it was noteworthy that the Bee-eater (which was joined for a few minutes by a second) and the Swallows kept strictly to whichever section the Bulbuls happened to be in at the moment, crossing over when they crossed.

"Curiously enough I yesterday afternoon saw Bulbuls taking the Bee-eater's rôle of to-day. A party of *Estrilda astrild* was following the sunk fence, seed-hunting as is their wont; above them, keeping mostly a few feet up in the higher vegetation, was a party of seven or eight *P. layardi*, which were keeping pace with them for the sake of the insects put out by the Waxbills. A male Bishop-bird in full plumage (*Pyromelana capensis xanthomelæna*) and two or three of his hens were also of the party and were sometimes in the grass, sometimes with the Bulbuls. A little lower down the slope a smaller detached party of *Estrilda astrild* was similarly seed-hunting in the grass about the foot of a young Indian 'sissoo,' and in the sissoo was a solitary Bulbul watching them."

The closely searching birds of the large mixed parties are to each other and to the Drongos and Flycatchers that attend them what the Waxbills of the above observations were to the Bulbuls and the Bulbuls to the Bee-eater. I have even seen birds attending a party of monkeys that was moving through the tree-tops in Chirinda.

While, however, I feel that the mixed parties are primarily drives, and the Drongo from this standpoint mainly parasitic, it is, I think, likely that the great "mobbing" power afforded by numbers must be so great an advantage as to probably act as a contributing factor. I think, too, that the Drongo, with his boldness and readiness to attack, quite likely fully "pays for his keep."

The fact of systematic co-operative hunting on so large a scale suggests the views on mutual aid amongst animals that have been laid stress on by some Russian naturalists; yet is of *particular* interest as suggesting how keen selection must sometimes be and how baseless, probably, is the view that the more perfect defensive adaptations of insects constitute hypertely.

XVII.—*A Note on* Loxia pytyopsittacus *Bork.*

By Claud B. Ticehurst, M.A., M.R.C.S., M.B.O.U.

In the lately published 'List of British Birds,' compiled by a committee of the B.O.U., I was very surprised to find that the Parrot Crossbill, *Loxia pytyopsittacus* Bork., was not included either as a good species or subspecies, and such a finding cannot be passed over without comment. It will perhaps be interesting to review how some previous authors regarded the question. Pennant was the first to notice this bird in Britain, and looked upon it as a large variety; he "received a male and female out of Shropshire," and noted accurately the characteristic features as compared with the Common Crossbill. Selby's Ross-shire specimen, used for the figure in his work and in the later editions of 'Bewick,' might now-a-days perhaps be open to doubt, but Mr. Eagle Clarke informs me that this actual specimen is still in existence in the Royal Scottish Museum, and is a genuine example of *L. pytyopsittacus*. Fleming included it as a straggler, and Macgillivray, although he admitted it to his list, seemed doubtful as to its validity but allowed he had only seen one specimen. Newton, in the fourth edition of Yarrell, accepted it without hesitation, remarking that it had for many years received specific recognition from the most approved authorities. Sharpe, on the other hand, and Saunders following him, did not "consider it even worthy of subspecific rank." Mr. Dresser, who examined many specimens of both forms, included it in his 'Birds of Europe,' and Dr. Hartert finds it a place in his 'Palæarctic Birds.' That specimens rightly referred to this bird have been on a number of occasions obtained in Great Britain cannot be doubted on referring to Yarrell, ed. iv. vol. ii. pp. 208–9, and several of these are still in existence, although they have not come under Dr. Hartert's notice (Vögel paläarkt. Fauna, p. 123).

Now to come to facts as regards this bird in contradistinction to the Common Crossbill. First we have the testimony of Wheelwright, an excellent field-naturalist who had excellent opportunities of observing both birds. He says it breeds in parts of Sweden (though he never met with it in Lappland), and that its appearance *scarcely ever coincides with that of L. curvirostra*; also that it feeds more on the seeds of the Scotch fir (and in this he is corroborated by Taczanowski), whereas *L. curvirostra* prefers the spruce; moreover the eggs and nest are generally somewhat larger.

Again, we have the evidence of the late Professor Collett (Mindre Medd. vedr. Nörges Fugelf. 1877–80, p. 73), who was not one to "hair-split" species. Here is a translation of what he says:—"Intermediates between this (*pytyopsittacus*) and *L. curvirostra*, or individuals whose diagnosis could be uncertain, I have up till now never seen in Norway. In 1881 this species occurred in larger numbers than *L. curvirostra*; in the Christiania district it occurs nearly every year, but in certain years when the Scotch fir has had a good cone-crop it is quite numerous. The autumn of 1881 was such a year in many parts, and in that year flocks visited many such districts, where they spent the winter and some remained to breed; in the autumn of 1882 some were seen again in October, but none afterwards." It is well known of course that Crossbills occur in numbers in some district in a certain year and remain to breed, deserting again that district for perhaps a number of years, and we have the above evidence from Scandinavia that the Parrot Crossbill behaves in a similar way. If, then, the Parrot Crossbill is only a large variety and not a true species, it would be certainly most remarkable that the two should not occur equally numerously together and interbreed, and that we should have no evidence from either Wheelwright or Collett that such takes place, but rather to the exact opposite.

That the Parrot Crossbill is a distinctly larger bird than the Common Crossbill I suppose no one will doubt. I have had the opportunity of examining only four recently, but neither of these nor any others that I have ever seen could be confounded with the Common Crossbill. The Scottish Crossbill (*L. c. scotica*), as will be seen from the measurements appended, is intermediate between the other two, but even so I have not seen out of fifteen or more specimens any which might be confounded with *L. pytyopsittacus*.

Though measurements do just indicate the differences in the size of the bill in these three birds, one can tell perhaps more easily by the comparative appearances of the strong, stout, thick, blunt-pointed bills of *scotica* and *pytyopsittacus*, than by actual measurement.

Loxia curvirostra curvirostra.

	Wing.	Tail.	Tarsus.	Culmen, from feather edge.	Height of upper mandible at base.	Width of lower mandible at base.
♂	93–101	58–62	17–18	17·5–20	7–7·75	10·5–11
♀	92–96	56–61	17–18	17·5–19·5	7–7·75	9·5–10·75

Loxia curvirostra scotica.

♂	98·5–104	61–64	17–18	18·5–20	8·25–9	11·5–13
♀	95–98·5	58·5–63·5	17–18	17·75–19·5	7–8	11–12

Loxia pytyopsittacus.

♂ (4 only) .	103–108	63·5–67	17–18	19·25–22	9·5–10	13·5–14
♀ (Collett) .	102–104	62–63	?	?	?	?

These measurements, which I have taken myself on a number of specimens, agree more or less with those of Prof. Collett, Mr. Dresser, and Dr. Hartert where corresponding measurements are given.

It would appear to be unreasonable to accept *L. scotica* as a good form and yet exclude *L. pytyopsittacus*. It may be urged that *L. scotica* has a definite and confined distribution, which is true *so far as we know at present*, though personally I failed to see any distinguishing character between *L. scotica* and the Cypriote bird, called *L. guillemardi*, on comparing a number of specimens of each.

XVIII.—*The new B. O. U. List of British Birds.*

By Dr. E. Hartert, M.B.O.U.

This list is truly called a "revised" edition of the first B. O. U. List of British Birds, which appeared in 1883.

The most conspicuous feature of this new edition of the List is naturally the nomenclature, the names of the species being printed in large black type, as headings. Needless to say it is radically different from that of the former list, and a very great advance. In 1883 trinomial nomenclature had not yet found its way into Great Britain, though it was used here and there, often in a curious and inconsistent way, by Seebohm. Moreover the tenth edition of Linnæus is now recognized as the starting point of nomenclature, in agreement with the practice of American and continental European ornithologists, and as in the 'Hand-list of British Birds,' the 'International Rules of Zoological Nomenclature' are generally followed.

This must be welcomed as a great step towards uniformity in nomenclature, which is now the aim of everybody, and also that of the Committee which compiled the List.

Until 1912 British ornithologists had not generally accepted the tenth edition of Linnæus. In the greatest work on ornithology, the 'Catalogue of Birds in the British Museum,' it was shunned to the end, only the writer of this review having quoted it in his portion of vol. xvi. Sharpe, in his 'Hand-list of Birds,' also stuck to the twelfth. In 1912, however, appeared the 'Hand-list of British Birds' in which the tenth edition of Linnæus and trinomial nomenclature were adopted throughout, and for the first time in a complete list of British Birds. It is curious that this has not been mentioned in the B. O. U. List, where the 'Hand-list' has only been quoted in Appendix III.

In the 'Hand-list' the authors tried to be absolutely consistent, adopting the oldest name in every case; therefore the nomenclature of the new B. O. U. List agrees almost entirely with that of the 'Hand-list'; but in thirteen cases—an unlucky number—priority has been ignored, and names formerly in use by European ornithologists have been preserved as "nomina conservanda." There is no explanation why just these thirteen names were selected. Had they not been preserved there would have been general agreement, or else the committee might have gone their own way and not altered any of the old, beloved, time-honoured names, and surely many of our friends would have welcomed their decision. Why, however, in one case "startling changes" (though mostly already familiar through the 'Hand-list') were adopted, in others not, is not explained. The thirteen names must have been chosen by personal taste, or by majority in the committee, neither of which can be convincing.

Let us take some instances:—The old-established name *Emberiza miliaria* has been rejected in favour of *E. calandra*, *Motacilla flava borealis* becomes *thunbergi*, the White-throat becomes *Sylvia communis*, the Garden-Warbler *S. simplex*, *Saxicola* becomes *Œnanthe*, while *Saxicola* is shifted over to the Chats. The names *Anthus spinoletta rubescens* and *Aquila fusca* have been newly introduced for the American Water-Pipit and the Great Spotted Eagle. The Woodchat has, after the many fluctuations in its nomenclature (*cf.* Hand-list B. B. p. vi), been called *Lanius senator*. Most surprising of all: the most popular bird in the land, the most glorious songster of all Europe, our Nightingale, has been called by the awful name *megarhyncha*, while the time-honoured *luscinia* has been shifted to the "Sprosser." All this is, of course, quite correct, according to the "Rules"; but if these and many other changes could be endured, why should, then, agreement with other lists be sacrificed for the sake of thirteen "nomina conservanda"?

Why, then, should *Astur palumbarius* not become *A. gentilis*, why should *Totanus fuscus* not be *maculatus*, why was *Sylvia hortensis* not used for the bird to which the name had originally been given, why should the wrong name *titys* be preserved for the Black Redstart, why *flammea* be used for the Barn-Owl, though it has before been given to another species, and so on?

It seems impossible to expect that these thirteen names will find universal sanction, if in so many absolutely similar cases strict priority has been preserved. The reviewer believes, however, that, if a united committee of the compilers of the B. O. U. List and the 'Hand-list,' so far as they were concerned in the nomenclature, were appointed, to draw up a new list of names, universal agreement in the British Isles could be reached.

In a few instances names of the 'Hand-list' have been rightly corrected, the errors in the 'Hand-list' being due to former combinations or publications which had been overlooked; such cases are *Aquila fusca*, *Anthus petrosus*, and one or two others.

There are, of course, other discrepancies between the new List and the 'Hand-list.' The limitation of genera is not in all cases the same. This, however, will always be a point of discussion, and those who were present at the meeting of the B. O. C. in February know best how different the views on genera can be. Here, too, consistency might have been greater than it is. If *Carduelis* and *Spinus*, *Hierofalco* and *Falco* are separated, why should, then, *Casarca* be united with *Tadorna*, and *Colœus* with *Corvus*? If *Hierofalco* is separated from *Falco*, how can *Tinnunculus* (*Cerchneis*) be united with *Falco*?

No consistency either is shown in the recognition of subspecies. *Sitta europæa britannica*, *Pratincola torquata hibernans*, *Regulus regulus anglorum*, *Prunella modularis occidentalis*, *Dryobates minor comminutus*, *Picus viridis pluvius*, and *Ægialitis hiaticula major* have been rejected—the last not even mentioned—because the committee was unable to recognise the differences of these races. If they could really not distinguish any of these, how were they able to separate *Garrulus glandarius rufitergum*, *Turdus philomelos clarkei*, *Carduelis carduelis britannica*, *Melizophilus undatus dartfordiensis*, *Phylloscopus trochilus eversmanni*, *P. collybita abietinus*, *Cinclus cinclus britannicus*, and all the British Titmice? Of the rejected forms there may be one or two about which doubts may exist, but nearly all of them are quite as distinct as many of the admitted British subspecies.

In opposition to recent American authors and the compilers of the 'Hand-list,' Pallas' names in Vroeg's Catalogue have not been adopted, because "the committee resolved not to recognize these names as being by an anonymous author." It is, however, certain that Pallas wrote the "Adumbratiuncula" to Vroeg's Catalogue, and no paragraph exists in the rules of nomenclature under which these names can be rejected. It does not seem admissible for the committee to adopt their own rules, and a step towards uniformity has thus been neglected.

On the other hand, it is quite correct to reject Oken's supposed generic names in the 'Isis,' 1817, p. 1183. It is difficult to understand why the A. O. U. accepted these names, as they were "not described in accordance with the rules laid down by the International Commission" (List Brit. B. p. 383).

The spelling of the name of the British Song-Thrush, which was called *clarkei*, has been altered to *clarkii*, and it has been stated that it "should be *clarkii*." Evidently the committee is of opinion that the name of a person, after whom a species is named, should first be latinized, and then put in the genitive. This was formerly practised by many, and perhaps by most writers, but it has been given up long ago. Article 14 *c* of the International Rules of Zoological Nomenclature reads as follows:—"If the name is a modern patronymic, the genitive is always formed by adding, to the exact and complete name, an *i* if the person is a man, or an *æ* if the person is a woman, even if the name has a latin form; it is placed in the plural if the dedication involves several persons of the same name. Examples: *Cuvieri*, *Möbiusi*, *Nuñezi*, *Merianæ*, *Sarasinorum*, *Bosi* (not *Bovis*), *Salmoni* (not *Salmonis*)."

So it is clear, that—if it was permitted to alter the spelling of any specific name—*sharpii* should rather be altered to *sharpei,* not the opposite, as has been done in the List. The committee has not been consistent either, for *dougallii* has been altered by them into *dougalli.* The reason for the decision of the International Commission and Congresses is clear. It was felt to be desirable that the name of the person, after whom a species is called, should be obvious. If the name is latinized, the original spelling is often obliterated. Take, for instance, *sharpei* : it is clear that this name can only have been *Sharpe*, while *sharpii* leaves it doubtful whether he was called Sharp or Sharpe, as both names would be latinized into Sharpius. In the case of *Sterna bergii* the spelling has been altered into *S. bergei,* under the supposition that the man's name was Berge ; but it has been suggested that he may have been called Berg, which is an equally common name, though it has finally become known that his name was Bergius.

The same remark applies to other names : *rayi* has been altered to *raii,* but *rayi* is correct.

The name of the Black-headed Wagtail is *feldegg* and not "*feldeggi*," given in honour of Freiherr von Feldegg who lived at Spalato, not "Spalatro." Michahelles wrote "*Feldegg*" and "*Neumayer*," not putting his dedication names in the genitive. This is perfectly permissible and has often been done. Humming-birds have been called *fanny, guy, edward, julie, alice, claudia, eva, cora,* etc., and we have no right to alter these names to *fannyæ* or *fanniæ, guyi, edwardi, juliæ, aliciæ, claudiæ, evæ, coræ.*

The committee found fault with the name *rufitergum* for the British Jay ; according to the reviewer's recollections of classical Latin, which he was once supposed to have mastered, the name is correct, meaning the red-back, and standing on a par with the frequently used *rufipes, flavipes, albifrons, albifacies, albigula, albinucha,* etc., etc.

It is, in the reviewer's opinion, regrettable that the "practice now common of repeating the specific name," viz. for "typical" subspecies, has not been adopted, and thus another discrepancy between the B. O. U. and the Hand-list and other modern works has been created.

The case of *Loxia pytyopsittacus,* which the committee does not consider distinct, has not been correctly stated. It not only differs from *L. curvirostra* in the "enlarged size of the bill," but it is a larger bird altogether and exceeds the Common Crossbill in all dimensions. It occurs only in some parts of the range of the latter.

In the quotations of the original descriptions of species there is a serious fault, viz., instead of quoting the original locality as given by the author, only a restricted "terra typica," often not mentioned in the description, is quoted. For instance, p. 169 :—

"*Anas querquedula* Linnæus, Syst. Nat. 1758, p. 126: Sweden." Linnæus, however, says: "Habitat in Europæ aquis dulcibus." Since the importance of a restricted typical locality has become evident, in consequence of the study of local races, often different in various parts of Europe, ornithologists have begun to fix a restricted place, where the author gave only a general idea. Therefore, in the case of Linnean species, Sweden has been fixed as the restricted "terra typica," as Linnæus quoted the 'Fauna Suecica' and took his diagnosis from the fuller description in that work; therefore the only correct quotation is as follows:—*Anas Querquedula* Linnæus, Syst. Nat. ed. x, i. p. 126 (1758—"Europa." Restricted typical locality Sweden!). It is also desirable to quote the original spelling rigidly exact, including capitals; it becomes then evident, whether the name was used as a substantive or an adjective, which influences the eventual stability or altering of the gender. The A. O. U. Check-list and Mr. Mathews in his books have unfortunately adopted the shorter, but inexact method, while the 'Hand-list of British Birds' has employed the more exact one.

The distribution of the species in the 'List of British Birds' has been most carefully compiled, both that within the British Isles as well that abroad. As reference has frequently been made to forms occurring outside the British Isles, these statements are bound to vary according to the views about those subspecies, and pitfalls have not always been avoided, though the compilers can only be congratulated on the results. A few instances may be mentioned to illustrate this. Under *Corvus monedula* (p. 3) it is not quite correct to say that it "has occurred" in the "Canary Isles, Morocco, and Algeria"; it has been observed on the Canary Islands only once or twice, while in north Algeria there are large breeding colonies, the birds there being resident, and a very different subspecies, *Colœus monedula cirtensis*.

Serinus serinus: It might have been mentioned that the German Serin has recently been separated subspecifically.

Fringilla cœlebs: It would have been interesting to know that the British form has been separated, though not recognized, in which the reviewer fully agrees. The same applies to *Alauda arvensis* and other species.

Galerida cristata: The expression "If these (*i. e.* the subspecies from Africa and Asia) are admitted" is misleading, because there can be no question as to the admittance of most of them, though one or two are doubtful and uncertain.

Calandrella brachydactyla: The south Algerian form has recently been separated.

Sitta cæsia: The Spanish form is obviously different, and the records from Africa are almost certainly erroneous.

Lanius excubitor and *meridionalis*: These two Shrikes would more properly have been treated as subspecies. If they are separated as species, then the expression under *L. excubitor*, that "allied forms" inhabit southern Europe, is easily misunderstood.

Aquila chrysaëtus: "Various races have been recognized" is a very vague term, and one would have liked more information.

Branta bernicla glaucogaster: It has been explained and is clear from the original description that *glaucogaster* is a synonym of *bernicla*, and that, therefore, the name cannot be used for the American form, if that is distinct.

Buteo desertorum: The distribution is not well explained; it is only a migrant to Africa and India, and never breeds there.

But it is unnecessary to continue these instances; they are only a few, and there are of course debatable points, which cannot be discussed in this place, as they require further investigation.

Notwithstanding the inconsistency in nomenclature and non-recognition of certain subspecies, the 'List of British Birds' is a great forward step in British ornithology. It must be welcomed by everyone interested in the progress of our beloved science as one of the last stepping stones enabling us to reach the highest possible level.

XIX.—*Obituary.*

PHILIP SAVILE GREY REID.

It is with great regret that we have to announce the death, at the age of 69, of Capt. Savile Reid, which took place at his home, "The Elms," Yalding, Kent, on March the 1st last. Though he had of late lost some of his interest in ornithology, owing probably to his lameness, from which he suffered during the last ten years, he was at one time much engrossed in the subject, and was often seen at our gatherings and at the British Museum.

Reid was born at Welwyn, Herts, August 12, 1845, and was educated at Burney's Naval School at Gosport as he was intended for the Navy, but he passed into the Royal Academy at Woolwich, whence he obtained a Commission in the Royal Engineers in 1865.

During his service at Gibraltar in 1871–3, he made the acquaintance of Col. Irby and was associated with him on many ornithological expeditions. Subsequently, as a result of a stay in Bermuda, he prepared a list of the birds of that group, which was published in the 'Zoologist' for 1877 and was afterwards republished, with additional notes, by the

United States National Museum (Bull. U.S. Nat. Mus. no. 25, 1885, pp. 163–279).

In 1881 he was stationed at Newcastle, in the upper part of Natal, and while there, in conjunction with Capt. (now Lt.-Col.) E. A. Butler and Capt. (now Col.) H. W. Feilden, he made considerable collections and a number of observations which were embodied in a paper, "Ornithological Notes from Natal," published in the 'Zoologist' for 1882.

A second paper by the same three authors, "On the Plumage-changes of *Saxicola monticola*," published in 'The Ibis' for 1883 (pp. 331–337), is of special interest, as this Chat, which is common on the high veld of southern Africa, goes through a most remarkable series of changes of plumage, which even now are far from being satisfactorily elucidated.

Reid sent in his papers in 1884, when still a Captain, and settled down in England. He made two other contributions to 'The Ibis'—"Winter Notes from Morocco" (Ibis, 1885, pp. 241–255) and "Notes on the Birds of Teneriffe" (Ibis, 1887, pp. 424–435 and 1888, pp. 73–83)—as a result of two winter trips.

When Oates was unable through illness to continue the 'Catalogue of the Birds' Eggs in the British Museum,' Reid undertook to carry on the work, and completed and saw through the press the third and fourth volumes.

Reid was elected a Member of the Union in 1877, and only resigned at the end of last year.

The following notes are communicated by one of his oldest friends and companions in ornithology :—

"Savile Reid was an all-round good sportsman, a sound naturalist, and a most accurate observer of all things animal and vegetable ; deeply interested in all branches of Zoology and Botany, and with a very special knowledge of our native fauna and flora, especially of its ornithology, entomology, and plants. Add to these advantages a charming personality, always blithe and good-tempered, ready to accept the rough with the smooth with equal equanimity, and a more delightful companion, either at home or in the field, it would be difficult to find.

"When I first knew him, many years ago, he was living at Froyle House, near Alton, Hants, and I well remember his excitement at seeing a female Cuckoo fly up from the ground with an egg in her bill and make for a Pied Wagtail's nest built in the ivy on the house. A hasty journey was made to inspect the Wagtail's nest, and there, sure enough, besides the three eggs it was known to contain, was a Cuckoo's egg still warm!

"For many years Reid was in the habit of making annual expeditions in summer to the north of Scotland to obtain nesting-groups of British birds for the series in the British Museum, at first with the late Colonel L. H. Irby, and then for many successive years with Mr. Ogilvie-Grant. Thus many groups of the most interesting species which are now exhibited in the Bird Gallery were procured. Among the more notable of these may be mentioned those of the Snow-Bunting and Dotterel taken in the Cairngorms, when Mr. F. D. Godman rented Inchrory Forest from the late Duke of Richmond. Reid and Grant always considered that occasion as the red-letter day of their many expeditions, the nests of both these special desiderata, each with a full clutch of eggs, being discovered before 2 o'clock P.M. on the first day of their visit. Reid was an artist of considerable talent, and his excellent water-colour drawings and plans of the various nests taken, greatly facilitated their subsequent reproduction with their natural surroundings.

"Always a keen gardener, when repeated attacks of rheumatism rendered expeditions in the field more and more difficult, Reid devoted most of his time to his garden at "The Elms," Yalding, many of his rare plants, especially his lilies, attracting special attention at the Horticultural shows."

KENNETH FORBES MEIKLEJOHN.

Through an oversight, the death of Lieut. Meiklejohn, of the 1st Cameron Highlanders, has not been recorded in our pages. He was killed in action at the battle of the Aisne, September 25, 1914.

Lieut. Meiklejohn, who was born in 1885, was a son of Lt.-Colonel J. F. Meiklejohn, late R.H.A. He was educated at Rugby and entered the Army in 1904. He was appointed Adjutant of his regiment, the 1st Batt. Cameron Highlanders, in March 1913.

He was elected to the Union in 1913, and is the first of our fellow-members who has fallen in the present war.

XX.—*Notices of recent Ornithological Publications.*

B. O. C. Migration Report.

[Report on the immigrations of summer residents in the spring of 1913 by the Committee appointed by the British Ornithologists' Club. Bull. B. O. C. vol. xxxiv. pp. 1-344. London, Dec. 1914.]

This is the ninth of the series of reports as originally planned. A tenth will be issued this year, after which it is proposed to summarize and digest the whole of the results of the enquiry in a single volume. The present report follows closely the lines of its predecessors and deals with the autumn migration of 1912 and the spring migration of 1913. In one respect the committee have been fortunate owing to the appointment of Mr. R. E. Wilson to the Caskets Lighthouse, so that they have at last been able to obtain adequate returns from this station, which is situated in the English Channel about eight miles west of Alderney. It is a most important point on the line of migration from England to the Continent, and the annual mortality there is enormous. Efforts, we understand, have recently been made to mitigate this by the supplying of perches around the lighthouse on which the birds rest.

The warm winter of 1912–13 appears to have induced a good many of our summer residents to spend the winter in the south and west of our islands, and this accounts perhaps for some of the very early records of arrivals in the first three months of the year.

We are much indebted to the committee and especially to the secretary, Dr. N. F. Ticehurst, for the unflagging energy displayed in compiling this report. Few who have not taken part in the work realize what an enormous amount of time and labour is required to reduce and codify the observations sent in by about 300 observers on land and from over 90 light-stations.

Chapman on new Neotropical Birds.

[Diagnoses of apparently new Colombian Birds.—III. By Frank M. Chapman. Bull. Amer. Mus. N. H. xxxiii. 1914, pp. 603–637.]

This paper contains diagnoses of twenty-four new subspecies, and two new species (*Pachyrhamphus magdalenæ* and *Cistothorus apolinari*) obtained by the various collectors sent out by the American Museum of recent years to Colombia. Mr. Chapman states that he hopes eventually to embody these and previous descriptions in a final report on the Museum's work in Colombia. Most of the species come apparently from the less explored western part of the republic lying between Bogotá and the Pacific. Further expeditions are now working in this country as well as in Panama, and when the final report is completed our knowledge of the extraordinarily rich bird-life of northern South America will undoubtedly be very greatly extended.

Miss Haviland on the Yenesei.

[A summer on the Yenesei (1914). By Maud D. Haviland. Pp. xii + 328; many photos. London (Arnold), 1915. 8vo. 10*s.* 6*d.*]

Last summer Miss Haviland with Miss Czaplicka, the well-known Polish anthropologist of Oxford University, Miss Dora Curtis, and Mr. H. V. Hall, made an adventurous journey down the Yenesei. Leaving London on May 28, the party travelled overland to Krasnoyarsk, where the Trans-Siberian railway crosses the Yenesei. Thence they descended the Yenesei in a steamer to Golchika, arriving there on June 28. This dreary spot, which is about 1500 miles down the river from Krasnoyarsk, lies well within the Arctic Circle and is surrounded by the eternally frozen tundra; here the party remained until August 28, when they returned to England through the Kara Sea and by the North Cape. Miss Haviland made good use of the two months at Golchika. She explored the river-banks and the tundra, and took the eggs of many rare Waders. Among these, perhaps the most interesting was the Curlew Sandpiper, which had only previously been obtained by Mr. Popham at the mouth of the Yenesei, while Miss Haviland found it nesting a long way farther south. Other interesting birds, whose nesting habits are described and whose photographs were taken, are the Grey and Red-necked Phalaropes, the Eastern Golden Plover, the Little and Temminck's Stints, the Bar-tailed Godwit, the Dotterel, the Siberian Herring-Gull (*Larus fuscus antelius*), the Black and Red-throated Divers, and the Long-tailed Duck.

Miss Haviland has much to tell us of all these and many other birds, of their migrations, their nesting and other habits, and we hope to give our readers a short paper on some of her observations in a forthcoming number of 'The Ibis.' In the meantime we can only recommend all who are interested in the life of many of our familiar migrants, when they leave us for their northern breeding places, to read this charming account of Miss Haviland's, on whom some of Seebohm's enthusiasm and energy seems to have fallen.

Høring's Report on Birds at Danish Lights.

[Fuglene ved de danske Fyr i 1913. 31te Aarsberetning om danske Fugle ved R. Hørring. Vidensk. Meddel. fra Dansk naturh. Foren. vol. 66, 1914, pp. 85–173; map.]

This report, formerly prepared by Mr. H. Winge, is now drawn up by Mr. Høring and follows much the same lines as in former years. It contains (1) a list of the lighthouses and lightships, the position of each of which can be very easily fixed by the map which accompanies the report; (2) a list of the species of birds sent in to the Zoological Museum at Copenhagen, with the dates and places where they were taken; (3) a chronological list of birds observed from January 1 to December 31, 1913, with a note on the weather and of those secured each day ; (4) a list arranged according to the "lights" where the birds were taken. No summary or conclusions appear to be drawn up, but the facts are very lucidly arranged and easily accessible to any inquirer.

Howard on British Warblers.

[The British Warblers. A History with problems of their lives. By H. Eliot Howard. Part IX. October 1914. London (Porter), 8vo.]

We have now before us the concluding part of Mr. Howard's interesting book on a well-known family of British Birds, and wish to congratulate him on the success with which he has marshalled his observations and elucidated his theories connected with the lives of the various species.

Moreover, we wish to draw attention to the general summary with which the work concludes. This impresses us with the idea that the most important factor tending towards reproduction is the securing by each male of a "suitable territory" which he holds against all invaders of his own sex, so that the first arrivals stand a better chance than those that come later. Fights for a territory are common, in which even the female has been known to participate. The Darwinian theory of Natural Selection is here evidently involved.

Under the head of each species we find descriptions of the manner of fighting, and, beyond this, of the expression of the emotions during the whole of the breeding-season, while the extent of the vocal powers for which the family is justly celebrated, the construction of the nest, and the care of the young also come under consideration.

Tables of measurements, with the localities where the eggs figured were taken, add to the usefulness of the work, which concludes with the Orphean, Dartford, and Icterine Warblers.

Two coloured plates, delayed on account of the war, will be issued to subscribers shortly.

Huxley on the Courtship of the Great Crested Grebe.

[The courtship-habits of the Great Crested Grebe (*Podiceps cristatus*); with an addition to the theory of sexual selection. By Julian S. Huxley, B.A. Proc. Zool. Soc. 1914, pp. 491–562; 2 plates.]

Prof. Huxley, who is, we understand, a grandson of the great Prof. Thomas Huxley of Victorian days, has given us a long and elaborate account of the courtship of the Great Crested Grebe, and has illustrated with his pencil some of the more remarkable of the attitudes assumed by the birds on these occasions.

Not only has he spent much time in observation, but he has endeavoured to give a rational explanation of these actions. In the first place, he points out that in the case of the Great Crested Grebe the movements and attitudes assumed are always mutual. It is a joint action of the two sexes in which each takes part. Among most birds the courtship movements and attitudes are confined to the male sex. But in this case the joint action is doubtless correlated with the fact that the crest and ruff, although only assumed in the breeding-season, are common to both sexes. Another point is that the courtship movements do not appear to have anything to do with actual coition, as while the former goes on in the open spaces of the lake and in the water, the latter takes place on a nest probably specially built for the purpose and in a retired spot among the rushes. The assumption of the sexual characters in this case can, therefore, in Prof. Huxley's opinion, not be due to the action of sexual selection as ordinarily understood, but to a modified form of selection, which is explained at length by the author and termed mutual selection.

The paper is a very interesting one, and we can strongly recommend its perusal to all interested in the courtship and display of birds.

Montague on the Birds of the Monte Bello Islands.

[A report on the fauna of the Monte Bello Islands. By P. D. Montague, B.A., Gonville & Caius College, Cambridge. Proc. Zool. Soc. 1914, pp. 625–652; 4 plates.]

Mr. Montague spent three months in 1912 on the Monte

Bello Islands which lie off the coast of Western Australia, between North-West Cape and Point Walcott. They are desert-like, lowlying islands, separated from the mainland by only a shallow sea and by no means attractive.

In this paper, with reports on other groups, is one on the birds, containing the names of twenty-five species, two of which are sufficiently distinct in the author's and Mr. Mathew's opinion to warrant subspecific distinction. These were described in the 'Austral Avian Record' in 1913. The present paper contains the field-notes, and is illustrated by two photographic plates of the nest of *Haliaëtus leucogaster* and the young of *Pandion haliaëtus melvillensis*.

North on the Nests and Eggs of Australian Birds.

[Nests and Eggs of Birds found breeding in Australia and Tasmania. By A. J. North, C.M.Z.S. Vol. iv., pts. ii.–v. Australian Museum, Sydney. Special Catalogue No. I. Pp. 97–472 & i–viii, pls. A 18–20, B xix–xxv. Sydney, 1913–1914. 4to.]

This important work, which has been in progress since June 1901, appearing at irregular intervals, is now complete. The last part contains an appendix in which the nesting-habits and eggs of twenty-two additional species are described, all of which have been recorded since the issue of the earlier parts of the work. The title-page and contents of the fourth volume as well as indices to the whole work are also included in this issue. Parts ii.–iv. deal with the Orders Columbæ, Gallinæ, Hemipodii, Sub-order Pedionomi, Fulicariæ, Alectorides, Limicolæ, Gaviæ, Tubinares, Pygopodes, Impennes, and Casuarii. The treatment is similar to that of the preceding volumes, the nomenclature being but little changed from that of the British Museum 'Catalogue of Birds,' and the results of Messrs. Mathews and Iredale's researches being ignored. We think that in the later parts references might well have been given to Mathews's 'Birds of Australia,' while it would also have added to the convenience of readers if references had been given to A. J. Campbell's book on 'Nests and Eggs of Australian Birds.' We miss also the useful lists of earlier descriptions of eggs given by Mr. Campbell.

The notes on nesting-habits, derived from various sources, are full and interesting, and well brought up to date. Mr. North, however, confines the scope of his work strictly to those species which breed in Australia and Tasmania, while Mr. Campbell included all species on the Australian list. The plates of nests and nesting birds from photographs (Series A) are excellent, but the heliotype figures of eggs (Series B), which are uncoloured in the copy sent to us, give little more than a rough idea of the size of the egg and character of the markings. Now that the introduction of the three-colour process has revolutionized the art of colour-printing and reduced the cost so materially, it seems a pity that these photographic illustrations could not have been replaced by a set of three-colour plates. The text-figures of birds by the late Mr. N. Cayley are somewhat crude and conventional.

In the article on *Rallina tricolor* (p. 206) we notice that Mr. North definitely rejects the supposition that this species lays spotted eggs. It will be remembered that there was some correspondence on the subject in 'The Ibis' for 1912 (pp. 198, 552 & 684) in which all the evidence pointed to this conclusion. Mr. E. C. Stuart-Baker informs us that the eggs of all the three species of this genus on the Indian list (*R. superciliaris*, *R. fasciata*, and *R.* (*Castanolimnas*) *canningi*) are also white. The eggs of *R. canningi* described in Hume & Oates, 'Nests and Eggs of Indian Birds,' iii. p. 398, and 'Catalogue of Eggs in the British Museum,' i. p. 115, are erroneously ascribed to this species, as are also the eggs mentioned in the second edition of Nehrkorn's 'Katalog' p. 36, under the heading of *R. fasciata*, and probably also those of *R. minahassa*. The eggs of *R. fasciata* are, however, correctly described in the 'Nachträge,' 1914, p. 47 *.

In the article on the Sooty Tern (*Sterna fuliginosa*), p. 326, Mr. North shows that in all the Australian breeding places the clutch consists almost invariably of a single egg, the rare instances in which two eggs are found together being probably due either to two birds laying together or to eggs accidentally rolling together. But he proceeds to add that it is impossible to lay down a hard and fast rule that a species only lays one egg, and quotes Audubon's extraordinary dictum that on Bird Key (one of the Tortugas) the Sooty Tern "always lays three eggs." This statement has been copied and repeated time after time. Seebohm ('History of British Birds,' iii. p. 294) also quotes A. O. Hume as his authority for stating that three is the full clutch in the Laccadives, and proceeds to enunciate a theory that when a bird is found sitting on a single egg the power of reproduction has been almost exhausted by continual robbery!

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* This is not the only genus of the Rallidæ in which the eggs are white, for it is apparently also the case in *Corethrura* (*Sarothrura*).

A careful study of A. O. Hume's account of his visit to the Cherbaniani Reef ('Stray Feathers,' iv. p. 429) shows that he arrived there late in the nesting season, when the young were already hatched and were running about the reef in great numbers. It was with the greatest difficulty that he obtained some thirty eggs, of which only twenty-three could be preserved. He certainly states that of the Sooty Tern, "we found two and three together," but the eggs were dropped promiscuously on the reef without any nest and probably were in most cases second layings, so that Hume was hardly in a position to state anything definite as to the number of eggs in the clutch. Mr. Stuart Baker informs us that all the eggs of this species in his collection from Indian sources were found singly.

But to return to the colony on Bird Key. Here we have Audubon's definite statement that three eggs are always laid. We can hardly believe that the birds have changed their habits so radically since his days; yet in 1907, when Mr. J. B. Watson visited the Dry Tortugas from May 4 to July 18 to study the nesting habits of the Noddies and Sooty Terns, he found both species laying only a single egg! The Rev. H. K. Job had a precisely similar experience in 1903, only two nests out of thousands inspected containing more than one egg. As this agrees exactly with what has been recorded not only by all Australian ornithologists, but also by Messrs. Chapman & Bonhote (Bahamas), J. J. Lister (Phœnix Isles), Pickering (Rosa Island), R. M. Sperling, F. G. Penrose, and C. Collingwood (Ascension), S. St. J. Farquhar (Farquhar Isles), W. M. Crowfoot (Norfolk Island), A. W. Anthony (Revillagigedo Isles), and others, the fact may be considered as established that the normal clutch of this species is one egg *in all parts of its breeding range*, though occasionally (as in all large colonies of birds breeding close together) cases occur in which two eggs or perhaps even three may be found in one depression. Thus one may see nests of the Common Tern with four and even five eggs, but from internal evidence they are not to be regarded as genuine clutches. Probably Audubon was told that the Sooty Terns would lay three times if robbed, and in writing the article subsequently from notes made on the spot, while stating that he never saw more than three eggs in any nest, omitted to mention the fact that the vast majority of nests contained only one egg.

We wish that Mr. North had made use of millimetres instead of decimals of the inch for his egg-measurements, as the latter system is quite unsuited to scientific work. Even where fractions of the inch are convenient for rough field-work, the more simple and accurate metric equivalent should always be added. But, taken as a whole, the work is a valuable contribution to oological literature and has been brought up to date. We heartily congratulate the author on the completion of his task, and on the production of a work which must be regarded as the standard for many years to come.

F. C. R. J.

Wetmore on the tail of Rhinoplax.

[A peculiarity in the growth of the tail-feathers of the Giant Hornbill (*Rhinoplax vigil*). By Alex. Wetmore. Proc. U.S. Nat. Mus. vol. 47, 1914, pp. 497–500.]

The two central tail-feathers of the Giant Hornbill are twice as long as the other eight, and Mr. Wetmore finds that these two are never of the same age or length, and concludes that they are developed alternately instead of synchronously. He believes that each feather remains in position for two years, and that only one feather is moulted each year, so that the central tail-feathers are never equally developed at any one time. So far as we are aware this curious anomaly has never been commented on previously.

Bird-Lore.

Bird-Lore. An illustrated bi-monthly magazine devoted to the study and protection of birds. Edited by Frank M. Chapman. Vol. xiv. for 1914.]

This is a magazine which has no exact counterpart in England. Perhaps it may be likened to a combination of 'British Birds' and the Journal of the Royal Society for the Protection of Birds. It deals to a large extent, though not exclusively, with the life-history of North American birds and is copiously illustrated with the results of American bird-lovers' cameras. It is also in addition the official organ of the Audubon Societies, a very powerful and widespread organization with branches in every State, as well as a strong and wealthy central controlling body, whose object is the protection and conservation of bird-life throughout the United States.

Thus much as an introduction to the present volume, as it appears to have very little circulation on this side of the Atlantic, and last year the writer of this notice had the very greatest difficulty in borrowing a complete set of the volume for 1913.

As to the contents of the present volume, perhaps the most original and useful paper is one on the voices and habits of neotropical birds by Mr. Louis Agassiz Fuertes, the well-known bird artist, who has accompanied many of the recent expeditions to Colombia and elsewhere in tropical America, and has had great opportunities for studying this little-known subject. There are four papers scattered through the present volume illustrated by drawings from the author's pencil, and containing most vivid descriptions of bird-life and bird-music in the tropical forest.

Each number of the present volume also contains a coloured plate of the species of the North American Finches and Sparrows, with descriptive articles on their plumages by Mr. Chapman and of their migrations by Mr. W. W. Cooke. Other coloured plates of well-known North American birds by Fuertes, Bruce Horsfall, and Allan Brooks, are found in the portion of the magazine devoted to the activities of the Audubon Societies.

An interesting annual feature of 'Bird-Lore' is the Christmas Census. Readers of the magazine are asked to make a list of all birds observed by them on Christmas-day, and the number of lists sent in from every corner of the States and Canada make a very useful contribution to our knowledge of the distribution of American birds in winter.

In the November-December number is published the annual reports of the various branches of the Audubon Society, and the income of the central body of the Association amounts to nearly £20,000 and the investments to over £70,000.

Irish Naturalist.

[The Irish Naturalist. Vol. xxiii. nos. 1–12, Jan. to Dec. 1914.]

There are not very many articles of great ornithological interest in the last volume of the 'Irish Naturalist.' Mr. G. R. Humphreys has recently found a nesting-place of the Roseate Tern, a bird not previously known to nest on the Irish coast. Mr. Humphreys wisely does not mention the exact locality, but he gives an account of what he saw and states that he examined from twenty to twenty-five undoubted nests of this rare species.

Miss Best and Miss Haviland spent a few weeks in the autumn of 1913 watching migration on Rathlin Island, off the coast of Antrim, but were a little disappointed at the results. They obtained, however, an example of a Greenland Redpoll (*Acanthis linaria rostrata*), which had hitherto only been recorded from Achill and Tearaght Islands off the Irish coasts.

Mr. F. M. Barrington reports that the Fulmars are again nesting on the Skelligs of Co. Kerry, and that the colony has (in 1914) increased to about seventy pairs. He also states on the authority of Mr. McGinley, the light-keeper, that the Gannets on Little Skellig are very rapidly increasing. Their numbers are estimated at 15,000 to 20,000, and it is probably the largest colony in western Europe.

A sympathetic memoir on Major Barrett Hamilton, accompanied by a portrait and a full bibliography, is contributed from the pen of Mr. C. B. Moffat.

Scottish Naturalist.

[The Scottish Naturalist. Nos. 25–36, Jan.–Dec. 1914.]

Under the able editorship of Messrs. Eagle Clarke, William Evans, and Percy H. Grimshaw, the 'Scottish Naturalist' continues to supply its readers with numerous articles on various branches of the natural history of Scotland. Most of the ornithological papers deal with migration and are either written or inspired by Mr. Eagle Clarke; he has found a new "Heligoland" at Auskerry, one of the most easterly of the Orkneys. It is lowlying, uninhabited, and only about 260 acres in extent, and has hardly any cover; in spite of this it is largely resorted to by migrating birds. Mr. Eagle Clarke spent some five weeks there in the autumn of 1913 and had very good results, observing altogether some 104 species; among them the Scarlet Grosbeak, Short-toed Lark, Red-throated Pipit, Dusky Willow-warbler, Yellow-browed Warbler, are all new to the Orkney Islands. Mr. Clarke also paid a visit to Fair Isle, and from his observations and those of the Duchess of Bedford and Mr. Wilson, seven additional species, including *Lanius minor* and *Œdicnemus œdicnemus*, have been added to the list of migrants passing that tiny islet.

Mr. C. G. Cash reprints with additions and corrections his history of the Ospreys at Loch an Eilein, in Inverness-shire. It is a sad story of ruthless persecution continued over a long series of years and has resulted in the final extermination of the Osprey as a British breeding-bird. The last year in which the Ospreys hatched out successfully was apparently

1896, and since 1902 no Osprey has been seen in the neighbourhood.

Mr. S. E. Brock contributes an interesting article on the display of the Mallard, supplementing the accounts previously given by Millais and Wormald. He believes that the female is influenced by the action of the male and does make some kind of choice in the matter of a mate, and that sexual selection does therefore occur in this species.

A series of interesting photographs of the rock "Stack and Skerry," one of the great breeding resorts of the Gannets, is contributed by the Duchess of Bedford, who visited this remote spot in her yacht last June. "Stack and Skerry" lies 27 miles north of the coast of Sutherlandshire and 40 miles west of Orkney, and is believed by the Duchess of Bedford to afford a nesting-place to over 5000 Gannets, as well as large numbers of Kittiwakes and Guillemots. During this trip Fair Isle, N. Rona, and St. Kilda were also visited, and a pleasant account of the various species of birds met with is given.

The Isle of May, lying at the mouth of the Firth of Forth off the coast of Fife, is regularly visited by Miss Rentoul and Miss Baxter, in order to observe migrating birds. In two trips in May and September–October 1913, they added ten new records to the list of the birds visiting the island, of which two, *Hypolais polyglotta* and *Saxicola indica,* were new to Scotland. The same authors also contribute an interesting paper on the moult of Passerine birds at the time of migration. An examination of a large series of skins taken at Fair Isle during this period has revealed the fact, not apparently generally realized, that Passerine birds, as well as many Waders, do migrate in a state of partial moult, this being usually confined to the body-feathers.

The capture of a fine male example of the so-called "Blue Fulmar" at St. Kilda by the Duchess of Bedford, gives Mr. Eagle Clarke an opportunity of more exactly describing its plumage and distribution. He comes to the conclusion that though this form is chiefly found far to the north within the Arctic zone, that it is not a subspecific race, but that the Fulmar is a dimorphic form like Richardson's Skua.

Transactions of the Norfolk Naturalists' Society.

[Transactions of the Norfolk and Norwich Naturalists' Society. Vol. ix., part v., 1913–14. Norwich, 1914.]

Of all the English counties Norfolk perhaps is the one where there is most local enthusiasm for ornithology, and the Transactions of the Naturalists' Society bear witness to this. The list of members contains the names of seven Buxtons and six Gurneys, besides those of many other well-known ornithologists. In the present volume we have an interesting account of the courtship postures and movements of the Ducks by Mr. H. Wormald, with outline drawings of the attitudes adopted.

A short note on the autumn migration movements of 1913 on the north coast of Norfolk by Mr. B. B. Riviere is followed by a notice by Mr. J. H. Gurney of the irruption of Waxwings which took place during the winter of 1913–14; he believes that the numbers in Norfolk and Suffolk exceeded anything since the winter of 1866–7, though they do not appear to have been so numerous as in 1849–50.

Messrs. S. H. Long and B. B. Riviere have compiled a useful list of additions and rare occurrences among the birds of Norfolk for the years 1909–1913. The number recorded up to the end of 1908 was 317 and only one species has since been added—the Willow Titmouse (*Parus atricapillus kleinschmidti*).

As is well known to most of our readers, a tract of land, including a headland with sand-dunes and salt-marshes, near Wells, on the north coast of Norfolk, has recently been made a Nature Reservation under the "National Trust for Places of Historic Interest or Natural Beauty." To the ornithologist Blakeney is specially interesting as the breeding-place of the Common and Little Tern, the Ringed Plover, Redshank, and Sheld-Duck. The first annual report of the Trust is printed in this volume, together with the regulations for the use of visitors, and other matters of interest. A research laboratory has recently been erected and several investigations of considerable importance, chiefly botanical, have been initiated. The committee in their report regret to have to state that although the Terns arrived in the colony in their usual numbers in 1913, the number of young birds was much smaller than usual, owing, it is believed, to the late arrival of the whitebait on which the young are fed.

List of other Ornithological Publications received.

Mathews, G. M. The Birds of Australia. (Vol. iv. pt. 2. London, 1915.)

Moulton, J. C. Hand List of the Birds of Borneo. Jnl. Straits Br. R. Asiatic Soc. No. 67, 1914.

Robinson, H. W. Report on the Results of ringing Black-headed Gulls. 'British Birds,' viii. 1915.

Shufeldt, R. W. Anatomical and other Notes on the Passenger Pigeon. 'Auk,' xxxii. 1915.

The Last Passenger Pigeon. A unique Photograph. 'Blue-Bird,' vii. No. 4, 1915.

The Auk. (Vol. xxxii. No. 1. Cambridge, Mass., 1915.)

Austral Avian Record. (Vol. ii. No. 7. London, 1915.)

Avicultural Magazine. (Third Series, Vol. vi. Nos. 3–5. London, 1915.)

Bird Notes. (New Series, Vol. vi. Nos. 1–3. Ashbourne, 1915.)

British Birds. (Vol. viii. Nos. 8–10. London, 1915.)

California Fish and Game. (Vol. i. No. 2. San Francisco, 1915.)

Canada, Geol. Survey. Dept. of Mines. (Summary Report for 1913, Memoir 54. Ottawa, 1914.)

Club van Nederlandsche Vogelkundigen. (Jaarbericht, No. 4. Deventer, 1914.)

The Condor. (Vol. xvi. No. 6; vol. xvii. No. 1. Hollywood, Cal., 1914–15.)

The Emu. (Vol. xiv. pt. 3. Melbourne, 1915.)

The Irish Naturalist. (Vol. xxiv. Nos. 1–3. Dublin, 1915.)

Messager Ornithologique. (No. 1. Moscow, 1915.)

The Scottish Naturalist. (Nos. 37–39. Edinburgh, 1915.)

The South Australian Ornithologist. (Vol. ii. pt. 1. Adelaide, 1915.)

XXI.—*Letters, Extracts, and Notes.*

The following letters have been received :—

Bornean Birds.

Sir,—You may be interested to hear of an addition to the Bornean list, which now numbers some 550 odd species.

In a collecting expedition up the Baram River, Sarawak, this year, the Museum collectors secured five little Phalaropes, which I have identified as *Phalaropus hyperboreus*. They were shot about 150 to 200 miles up the river from October 20 to 27. Count Salvadori in his book on the Birds of Borneo, published in 1874, mentioned this species as likely to occur in Borneo, but there appear to be no records of it nearer than Celebes.

Yours truly,
J. C. Moulton,
Curator, Sarawak Museum.

Sarawak Museum,
December 29, 1914.

Modern Nomenclature.

Sir,—"What's in a name." In the last number of 'The Ibis' we find on page 58 the Common Sandpiper designated as "*Tringoides hypoleucos*," on page 114 it is called "*Totanus hypoleucus*," while turning to page 168 it appears as "*Tringa hypoleuca*," the three authors of the papers agreeing neither in generic nor specific names; so that had there been necessity for more authors of papers to write the latin name for this bird, we might reasonably have expected a few more variations! We have heard a good deal lately about strict priority, 10th edition of Linnæus, and uniformity, but if this is a sample of what we may expect in uniformity, it seems we are no better off than before: in fact, the going back to 10th edition names appears to simply add an additional alternative in nomenclature.

I am, Sir,
Yours &c.,
Claud B. Ticehurst.

Lowestoft,
January 18, 1915.

THE NEW B. O. U. LIST: SOME CORRECTIONS.

SIR,—May I first be permitted to congratulate the Committee of the B. O. U. on the very excellent working List of British Birds which they have compiled. I wish to state at once that the motive of this letter is not to pick small holes in a big work upon which so much trouble and thought have been expended.

The new "List," however, contains a number of references to the Canary Islands which are evidently based on inaccurate information; as this is not by any means the first time that these same statements have appeared in print, I consider that the present is a favourable opportunity to rectify the mistakes which have occurred.

Having made a special study of the Avifauna of the Canary Islands for the past seven years, especially of the literature, I can speak with a certain amount of authority.

In a list of British Birds only a general distribution is necessary, and it is obviously impossible for a committee to check every reference when drawing up the exotic distribution of each species: the statements of local ornithologists have usually to be taken on trust, and it is very difficult, and often quite impossible, to verify their assertions. Unless mistakes in distribution, however small, are corrected by one who has made a special study of the district, they are apt to be copied and repeated *ad infinitum*.

This is my excuse for trespassing so much on your space: the following comments may seem worthy of consideration by the committee, whose duty it will be to bring out the next edition of the B. O. U. List of British Birds.

The species mentioned are arranged under the names used in the "List," with a reference to the page on which they occur in that work. When a sentence is quoted direct from the List, the entire sentence is put in italics.

CORVUS CORAX (p. 1). It is very doubtful whether the Raven of the Canary Islands is distinct, *vide* Ibis, 1912, p. 625; 1914, p. 235.

ORIOLUS ORIOLUS (p. 10). "*It has strayed as far as the Faeroes, Azores, and Madeira.*" The Golden Oriole has been recorded many times from the Canary Islands, where it is sometimes numerous in spring, when I have seen it myself. See also Meade-Waldo, Ibis, 1893, p. 191. It is recorded also by Cabrera, Polatzek, and von Thanner. The Canary Islands are about 300 miles farther south than Madeira.

MOTACILLA ALBA (p. 40). "*. . . is plentiful in the Canary Islands . . . in winter.*" This is not the case now. It is an irregular winter visitor in *small* numbers, but regular bird of passage in early spring. It has never been numerous since 1889–1891, when a phenomenal migration occurred.

MOTACILLA BOARULA (p. 41). "*. . . a resident race*, M. b. schmitzi, *has been described from the Atlantic Islands.*" This is not the form found in the Canary Islands, which has been named *M. b. canariensis* Hartert. Opinions vary as to whether *M. b. canariensis* can be separated from *M. b. boarula.*

SYLVIA COMMUNIS (p. 65). "*It winters in Africa south to Damaraland, and in the Canary Islands.*" There is only one authentic record of the Common Whitethroat having been obtained in the Canary Islands: a bird having been shot by von Thanner in Fuerteventura on the 1st of April, 1912, and recorded as *Sylvia communis communis.* The explanation of this mistake, which has been copied by many authors, is as follows:—Webb & Berthelot in 'Ornithologie Canarienne' (1810) recorded *Sylvia cinerea* Lath. as breeding in the islands. This is obviously founded on the *female* of the Canarian Spectacled Warbler (*Sylvia conspicillata bella*), as can be seen by comparing their description with that bird. If this mistake had not been obvious, the bird should have been included under the Lesser Whitethroat, as *Sylvia cinerea* Lath. is a synonym of *S. curruca* Linn. and *not* of *S. communis.* It may be argued that Webb & Berthelot referred to the Spectacled Warbler under the name *S. passerina.* This is certainly the case: Webb & Berthelot referred to the *male* Spectacled Warbler as *S. passerina*, considering it to be a different species from the female, which, as already shown, they called *S. cinerea* Lath. It is worth noting that the name *S. passerina* is absolutely indeterminable. It has been fixed by certain authors on to the

Garden Warbler (*Sylvia simplex* Lath.), but in Latham's description the bird is said not to occur in England!

SYLVIA ATRICAPILLA (p. 67). "*Birds from Madeira and the Canary Islands have been separated as a distinct race.*" This is true in so far as it goes, but the fact that *Sylvia a. atricapilla* visits the Canary Islands regularly on migration, sometimes in large numbers, is ignored. The European Blackcap does not remain to breed, but passes through the Archipelago. It can be distinguished from the resident race, *S. a. obscura*, by having invariably a thick layer of fat surrounding the body, which is absent in the subspecies; moreover, the resident race, which never migrates, is slightly darker. For accounts of migratory movements of the European Blackcap in the Canary Islands, see Meade-Waldo (Ibis, 1893, p. 189), von Thanner (Orn. Jahrb. 1910).

SYLVIA MELANOCEPHALA (p. 68). "*The Sardinian Warbler is a partial resident in the countries and islands of the Mediterranean, Madeira, and the Canary Islands. ... In the western Canary Islands it is represented by* S. m. leucogastra, ..." From the above it certainly appears that two distinct races of the Sardinian Warbler occur as resident forms in the Archipelago. The type locality of *S. m. leucogastra* is certainly in the western group, *i.e.* Tenerife, but if this insular race is to be 'kept up' we must certainly include the Sardinian Warblers of Fuerteventura and Lanzarote under the same subspecific name (*vide* Ibis, 1914, p. 247).

TURDUS PILARIS (p. 88). "*It winters ... in small numbers ... in the Canary Islands.*" In reality the Fieldfare is one of the rarest irregular migrants to the Archipelago. Meade-Waldo saw one bird in three years, 1889–91. The next record is in 1903, when some birds came to Lanzarote on the 20th of October, stayed about a month and then all departed. This is the last record to date.

FLAMMEA FLAMMEA (p. 128). "*The Barn-Owl ranges from the Azores, ... to Greece.*" The exceedingly interesting fact that the Barn-Owl of Tenerife is quite indistinguishable from the typical European examples, and therefore that its southern range is considerably extended, is not noted. It is remarked (correctly) that a distinct race inhabits the Canary

Islands, but it might be added that it is confined to certain islands (*vide* Ibis, 1914, p. 231).

TOTANUS HYPOLEUCUS (p. 230). Proof that the Common Sandpiper *breeds* in the Canary Islands is still wanting. There is no reason why it should not do so.

NUMENIUS ARQUATA (p. 237),
NUMENIUS PHÆOPUS (p. 238).

Both the Curlew and Whimbrel are reported by the same authority, Herr von Thanner, to have bred in the Canary Islands. It may be of interest to give references to von Thanner's statements (*vide* (1) Orn. Jahrb. 1908, p. 213, et (2) 1913, p. 190). I certainly wish to prove this for myself.

ÆGIALITIS HIATICULA (p. 244). The fact that two races of the Common Ringed Plover occur in Great Britain is now absolutely proved (*vide* Lowe, Ibis, 1914, p. 395).

ÆGIALITIS DUBIA (p. 246). The Little Ringed Plover is known to breed in the Canary Islands—a fact worth recording (*vide* Ibis, 1912, p. 582).

STERNA SANDVICENSIS (p. 268). "*The Sandwich Tern breeds . . . occasionally . . . in the eastern Canary Islands.*" There is absolutely no proof of this. If it bred in the eastern group in 1841, it certainly has ceased to do so long since. It must be remembered that Bolle in 1857 did not distinguish between this and the Common Tern, which latter used to breed in enormous numbers in the islands, but which has now practically been exterminated by egg-hunters.

URIA TROILE (p. 277). The Common Guillemot has been known to reach the shores of the Canary Islands. It is recorded by Webb & Berthelot in 1841 and Bolle in 1857, who saw a stuffed specimen in the Léon collection in Gran Canaria. This is an additional proof that it sometimes wanders south to about 30° N. in the Atlantic, as stated in the B. O. U. List.

THALASSIDROMA PELAGICA (p. 281). Has bred in Madeira, *vide* "Distribution and Nidification of the Tubinares in the North Atlantic Islands" (Ibis, 1914, p. 448).

OCEANODROMA CASTRO (p. 283). The Madeiran Petrel *undoubtedly* breeds in St. Helena (*vide* Ibis, 1914, p. 452).

Rallus aquaticus (p. 300). "*It occurs occasionally in Madeira and the Canary Islands.*" The statements of Serra and Mompo who are, I believe, the only authorities for saying that the Water-Rail has ever occurred in the Canary Islands, are most unreliable.

Gallinula chloropus (p. 305). Our Common Moorhen does not migrate south of the Palæarctic Region. The bird found over the greater part of Africa to the Cape is a perfectly distinct *small* race—i. e. *Gallinula chloropus meridionalis* Brehm. The form found in the Canary Islands is, I believe, typical *G. c. chloropus*, and this is probably the southern extent of its range.

Columba livia (p. 308). The Rock-Dove of the Canary Islands is distinct from the typical form. It has recently been separated as *C. l. canariensis* on account of its smaller size grey rump, and darker coloration (*vide* Ibis, 1914, p. 270).

I am, Sir,
Yours, &c.,
David A. Bannerman.

6 More's Garden,
Cheyne Walk, S.W.
March 1, 1915.

The New B. O. U. List: more corrections.

Sir,—I hope, in the next number of 'The Ibis,' to make some comments upon the List of British Birds recently published by the British Ornithologists' Union. I only wish here to draw attention to four errors which should be at once corrected. Before doing so, I would state that, to me, the List is a great advance upon any previous British List, and predict that the third edition, which must appear before thirty years again elapse, will be comparatively blameless.

Aquila fusca (p. 142). This name cannot be used for the Spotted Eagle, as of Brehm 1823, because in the Dict. Sci. Nat. vol. i. 1804, p. 344, Dumont appropriated that name for a bird which appears to be a stage of the Golden Eagle. According to the B. O. U. List, Appendix, p. 379, the name to be used would be

Aquila clanga Pallas, Zoogr. Rosso-Asiat. vol. i. 1827, p. 351 : Russia.

A curious error has slipped in, the meaning of the specific name given namely "*maculata* = spotted," instead of "*fusca* = brown."

Glaucion Kaup, 1829 (p. 178). This name cannot be used, as it is invalidated by *Glaucion* Oken, Lehrb. der Natur. vol. iii. pt. 1, 1815, p. ix, used for a Mollusc.

As the Committee consider *Anas clangula* Linné and *Anas albeola* Linné to be congeneric, the name to be used is, to me, at present problematical. By American ornithologists these species are referred to different genera, and therefore the question of priority of publication of the two available names has not been discussed. Stejneger introduced both names in two different publications at practically the same time; so I give the references to both. In my opinion these two Ducks represent different genera.

The names are:—

Glaucionetta Stejneger, Proc. U.S. Nat. Mus. vol. viii. p. 409 (published September 14, 1885). Type (by orig. design.): *Anas clangula* Linné.

Charitonetta Stejneger, Bull. U.S. Nat. Mus. No. 29, p. 163, 1885 (Advt. dated August 20). Type (by orig. design.): *Anas albeola* Linné.

The latter would seem to have priority, as it was probably published within a week of August 20.

I would accept some blame for these two errors as the facts were known to me, but I apparently overlooked their transmission to Mr. W. L. Sclater. I would here mention that though the Committee have acknowledged my aid, for which acknowledgment I sincerely thank them, such was quite unofficially rendered to Mr. W. L. Sclater, who undertook the nomenclatural work, and to whom is due the thanks of all British and extra-limital ornithologists for the accuracy seen in this List.

TRINGA MACULATA Vieillot (p. 219). This name is invalidated by the earlier use of the same combination by Linné, Syst. Nat. 12th ed. 1766, p. 249. This correction was published by Mathews (Birds Austr. vol. iii. p. 261, August 1913), who showed the next name to be *Tringa pectoralis* Say in Long, Exped. to Rocky Mts. vol. i. 1823, p. 171, footnote: Engineer Cantonment, near Rocky Mts., U.S.A.

STERNA FULIGINOSA Gmelin (p. 269). This name is retained, not as a *nomen conservandum*, but because, according to the Committee, *Sterna fuscata* Linné "is based on a young bird, and the identification with the Sooty Tern is uncertain." This statement is incorrect, as I have indicated in 'The Ibis' for July 1914, and I cannot appreciate the reason for the promulgation of such a remark. Extra-limital workers would conclude from the Committee's statement that my article has been criticised by them and that I had erred. This is not so, as in this case there is no matter of opinion concerned, but simply facts, and these are absolutely conclusive.

The correct name is *Sterna fuscata* Linné, Syst. Nat. 12th ed. 1766, p. 228: Domingo.

I can understand any reason being sufficient in the case of a *nomen conservandum*, but an erroneous statement cannot achieve any good but only cause trouble.

I am, Sir,
Yours, &c.,
TOM IREDALE.

Natural History Museum,
Cromwell Road, S.W.,
March 6, 1915.

The Annual General Meeting of the British Ornithologists' Union.—The Annual General Meeting of the B. O. U. for 1915 was held on March 10 at the Offices of the Zoological Society of London, the President, Col. R. G. Wardlaw-Ramsay, being in the Chair. There were sixty-two members present.

The Minutes of the last Annual General Meeting were read and confirmed.

The Secretary read the following Report of the Committee for the past year:—

"The Committee regret that they have to report a further decrease in the funds of the Union during the past year. The accounts, which have been audited in detail by Mr. D. Seth-Smith, show that the total receipts in 1914 were £731 4*s.* 10*d.* as compared with £608 6*s.* 7*d.* in the previous year, and the total payments amounted to £811 13*s.* 7*d.* as against £634 9*s.* 8*d.* in 1913. The balance carried forward to 1915 was £32 10*s.* 7*d.*

"The great increase in receipts is chiefly due to the sales of 'The Ibis' for the final quarter of 1913 not having been received until too late for inclusion in the balance-sheet for that year; consequently the sales receipts for *five* quarters appear in 1914 and only three in the previous year, and the increase thus caused amounted to £92 13*s.* 9*d.*

"On the payments side, for the same reason, there is included the payments for the cost of distribution of 'The Ibis' for five quarters in 1914, as against three only in 1913, but the outstanding expenditure, amounting to nearly £200, was on account of the new List of British Birds, and the General Index now in course of publication. The greater part of the cost of these two works, however, has yet to be paid, and will place the finances of the Union in a very critical position.

"The increase in the cost of 'The Ibis' volume for 1914 is only apparent, as the cost of distribution in 1913, as stated above, only represented three of the four quarterly parts.

"The Annual Volume of 'The Ibis' for 1914, edited by Mr. W. L. Sclater, is the fifty-sixth, and the second of the tenth series. It contains 677 pages, and is illustrated with 8 coloured and 18 black-and-white plates and 8 text-figures.

"With regret the Committee report the deaths of Mr. C. A. Ball and Lieut. K. F. Meiklejohn since the last Annual General Meeting.

"The following gentlemen have resigned:—A. J. Cholmley, Col. A. H. Cowie, A. R. Gillman, Lt.-Col. R. N. Harvey, J. H. Leigh, Capt. P. S. G. Reid, Stephen Venour, A. S. Verey, Charles Whymper, W. Strang-Watkins, and C. W. de Vis.

"The name of Mr. R. A. Crowley has been removed from the List of Members under Rule 6.

"The membership of the Union, and comparison with the previous five years, is as follows:—

	1915.	1914.	1913.	1912.	1911.	1910.
Ordinary Members ...	441	433	425	420	419	424
Extraordinary ,, ...	1	1	2	3	3	3
Honorary ,, ...	9	7	8	9	9	9
Hon. Lady ,, ...	6	6	6	6	4	—
Colonial ,, ...	10	9	9	9	10	9
Foreign ,, ...	20	19	20	20	19	20

"There are 9 candidates for Ordinary and 1 for Honorary Membership, and 2 for Hon. Lady Membership.

"The new edition of the B. O. U. List of British Birds was published early in February, and the Committee hope that every Member will purchase a copy.

"The compilation of the new General Index for the years 1895 to 1912 is completed, and the first sheets are now in type."

The statement of accounts for the year 1914, previously circulated to Members, was submitted and approved, and a vote of thanks was accorded to the Auditor, Mr. D. Seth-Smith.

Dr. C. B. Ticehurst and Mr. G. M. Mathews were appointed Scrutineers to superintend the Ballots, and the Meeting then proceeded to elect the Officers for the ensuing year. It was announced that Mr. E. C. Stuart Baker had been re-elected Hon. Secretary and Treasurer, and that Mr. D. Seth-Smith had been elected a Member of the

Committee in the place of Dr. E. Hartert, who retired by rotation.

The following nine gentlemen were elected Ordinary Members of the Union:—Edwin Ashby; Arthur D. Bradford; R. C. Staples Browne, B.A., F.Z.S.; Robert A. Currie; George H. Dawson; Sir Henry J. Johnson, F.Z.S.; Eustace B. Maton; William N. May; and Oliver H. Wild.

Mr. C. W. Richmond, a Foreign Member of the Union, was transferred to the list of Honorary Members; and Dr. Emilie Snethlage and Miss Annie C. Jackson were elected Honorary Lady Members.

The Chairman then asked the Meeting to formally confirm the Committee's resolution, that the Annual Subscription to the Union be raised from £1 to £1 5*s*. He announced that as a result of the circular-letter sent to all Members on May 1, 1914, 222 replies had been received, and of these only 18 were against the increase. He also drew attention to the present low state of the funds of the Union and the greatly increased expenditure which had to be met.

After a short discussion of the Accounts, in which Messrs. Witherby, Iredale, Forbes, and Chase took part, the resolution was put to the Meeting and confirmed.

[*Note.*—A formal notice of the increased subscription will be sent to all Members in due course, together with a new Banker's Order form for the use of those who prefer this means of payment.]

A vote of thanks to the Zoological Society for the use of their Offices and Rooms during the past year was unanimously carried.

A vote of thanks to the Chair closed the Meeting, and the Members adjourned to attend the Annual Dinner, which was held in conjunction with the monthly dinner of the British Ornithologists' Club.

The new B. O. U. List of British Birds.—The volume is now ready, and it is hoped that all Members who have not yet done so will send the subscription price (including postage, 5*s.* 6*d.* a copy) to the Hon. Secretary, B. O. U., c/o the Zoological Society, Regent's Park, N.W.

Some copies of the first edition, published in 1883, still remain unsold. Any Member wishing to have one can do so on applying to Messrs. W. Wesley & Son, and enclosing a remittance of 2*s.* 10*d.* The remaining stock of the first edition will shortly be destroyed.

THE IBIS.

TENTH SERIES.

VOL. III. No. 3. JULY 1915.

XXII.—*Notes on Bird-Migration at the Mouth of the Yenesei River, Siberia, as observed in the Autumn of* 1914. By MAUD D. HAVILAND.

DURING the summer and part of the autumn of 1914, as a member of the party of Miss Czaplicka of Oxford, I spent some weeks on the estuary of the Yenesei River. July and August were passed at Golchika; part of September I spent at Nosonovsky Ostrov, one of the islands of the Breokoffsky Group, about two hundred versts higher up the river. At Golchika I was able to keep regular records of the departure of the different species of birds; at Nosonovsky, where I was living on board ship, it was not possible to make observations on shore every day, and my notes are incomplete.

Apart from the obvious drawbacks of making observations in such an immense and uniform country as the Yenesei tundra, where at any time bird-life tends to be scattered and diffused, there is great difficulty in obtaining anything like a just idea of the direction and magnitude of any migratory movement. In England it is possible to judge the trend and scope of such movement by the species or subspecies that are observed to pass; but at the mouth of the Yenesei this often cannot be done, because, being itself so far north, the species seen are all represented locally, and it is impossible to say whether they have been reared in the district or are passengers from yet higher latitudes.

For the purposes of this paper, the birds that I observed at Golchika can be divided into two groups: those whose return migration appeared to take place at the heyday of the summer, quite independently of weather-conditions or food-supply; and those whose southward movement was put off until the winter storms drove them away. Certain interesting species, such as the Red-breasted Goose (*Branta ruficollis*), Long-tailed Skua (*Stercorarius longicauda*), and Bar-tailed Godwit (*Limosa lapponica*), were too scarce to allow of any observations being made of their movements.

The first group included the Turnstone (*Arenaria interpres*), Grey Phalarope (*Phalaropus fulicarius*), Shore-Lark (*Otocorys alpestris*), Red-throated Pipit (*Anthus cervinus*), Curlew-Sandpiper (*Tringa ferruginea*), Arctic Tern (*Sterna paradisea*), and possibly the Red-necked Phalarope (*Phalaropus lobatus*) and Wheatear (*Œnanthe œnanthe*).

Of these, the Turnstone was the only species that I did not find breeding in the district; in fact, it did not occur there at all until August 12, when I shot a bird from a little flock of four on the western shores of the river. The specimen was a female, and did not appear to have bred. For the subsequent two days several of such little parties passed Golchika, but after that I saw no more until September 5, when I flushed a solitary bird from a swamp at Nosonovsky.

The Grey Phalarope was the earliest of all the birds to leave Golchika. This species bred rather late, for it nested in the low-lying marshes which were under water during the thaw; but the young fledged with great rapidity, and by August 5 there was not a bird to be seen.

The next departure was that of the Shore-Lark, which I last recorded on August 10. This bird nested on the crests of the dry hills of the tundra, which were among the first spots to be freed from snow, and consequently the eggs were laid early.

The Curlew-Sandpipers departed about August 15. They did not come down to the riverside flats and marshes before migration, as did the Stints and Plovers, which bred with them on the tundra.

The Red-throated Pipits also had all disappeared by August 15. This Pipit breeds rather late, but at Golchika the young are fed by the parents long after they have left the nest. I saw a bird with its bill full of mosquitoes on August 7, and therefore the fledglings must have been tended almost until the date of departure.

The Arctic Tern and the Red-necked Phalarope disappeared (approximately) about August 18; but I saw a solitary bird of the latter species swimming in the Yenesei on August 26. The White Wagtail (*Motacilla alba*) and Wheatear were not observed at Golchika after August 20, though two young birds of the former species were seen on September 3 at Pustoy, seventy versts to the south.

The departure of the second group of birds was, I think, entirely due to the weather-conditions. On August 27 severe south-easterly gales set in and blew for six days, with frequent squalls of rain. During this time I constantly saw small flights of Plovers and Stints passing up the Yenesei. This storm drove away the Lapland Buntings (*Calcarius lapponicus*), Snow-Buntings (*Plectrophenax nivalis*), Ruffs (*Machetes pugnax*), Grey Plovers (*Squatarola squatarola*), and Temminck's Stints (*Tringa temminckii*). It also disposed of the bulk of the Little Stints (*Tringa minuta*) and Dunlins (*Tringa alpina*), though I saw a few of these two species on September 2. Ringed Plovers (*Ægialitis hiaticula*) and Asiatic Golden Plovers (*Charadrius dominicus fulvus*) were common until September 3, on which date I left the district.

From the above notes it is obvious that, although food-supply undoubtedly influenced the movements of such species as the Red-throated Pipit, whose young are reared almost entirely on mosquitoes, and possibly those of the Arctic Tern (although on the Yenesei this tern does not live only upon live food, but scavenges for offal round the fish-stations like any gull), yet in certain cases the mainspring of the southward migration cannot be referred to this cause. For instance, the Grey Phalarope disappeared more than a fortnight before the Red-necked Phalarope, although, to a human observer, the two species seem identical in the matter of food, haunts, and habits. Again, the Shore-Lark and the Wheatear inhabit the same ground and are apparently very similar in their feeding-habits, and yet one leaves many days before the other. The Curlew-Sandpiper and the Golden Plover breed at the same time, and frequent the same parts of the tundra, and yet the former species migrates much earlier than the latter; and so on.

The ducks (*Clangula hyemalis*) and the geese and divers do not leave Golchika until mid-September. In the case of the divers this is owing to the lateness of the breeding-season, for the birds are obliged to wait until the ice has thawed on the little lakes, and consequently the young cannot fly before the end of August. The White-billed Diver (*Colymbus adamsi*) breeds out on the tundra, some hundreds of miles east of the Yenesei. I did not meet with this species, but the Siberians recognized it from descriptions and pictures and said that it was sometimes seen at Golchika in the spring, but they did not remember having seen it in the autumn. Mr. A. Trevor-Battye records that he saw one of these birds at Kolguev towards the end of June; so that it is just possible that in the spring migration the birds move eastwards across the mouths of the great estuaries. In the autumn they may travel by a more direct and slightly different route to the south—possibly up the valleys of the Pyasina and Khatanga Rivers.

There is one record of some little interest at Golchika, and that is the occurrence of the Bluethroat (*Cyanosylvia suecica*). So far as I could ascertain, this species does not breed within a hundred miles of the district, but during the first week in August a few small parties of immature birds appeared along the riverside and haunted the driftwood-strewn beaches for two or three weeks. Mr. H. L. Popham

(Ibis, 1897, p. 93) mentions that he also saw young Bluethroats at Golchika in August.

My observations at Nosonovsky Ostrov were very disconnected, and are consequently of little value. On September 5 I saw numbers of Wheatears on the foreshore, also some Lapland Buntings and a few Mountain Accentors (*Accentor montanellus* Dresser). I believe that Breokoffsky is the most northerly point of the range of this bird on the Yenesei. Four days later all the Accentors and most of the Buntings and Wheatears had gone; and in subsequent visits ashore I saw no small birds at all, except a few Ringed Plovers and two Wheatears on the 12th. The absence of Waders surprised me a good deal, for the broad sandy beaches looked like an ideal feeding-ground; but I saw none but one Ruff, which flew past the ship on the 14th. Geese continually flew southward in small parties, and occasionally I saw Swans and Divers. On shore the Willow-Grouse (*Lagopus albus*) was frequent. The Siberians said that it often lingered until October. Gulls (*Larus fuscus antelius*) remained common until my departure on September 19, and a few accompanied the ship as far north as Dickson Island.

With regard to the *direction* of migration on the Yenesei, there can be little doubt that on the lower reaches, at any rate, both for geographical and also for climatic reasons, the principal movement is from north to south along the coasts of the great river. However, I do not think that, even if we knew as much of the bird-movements in those regions as we do of those in our own country, that we could write of them otherwise than with reserve, for the reason that in those latitudes life of all kinds is dependent on climatic conditions to a degree unknown in the south. Any acceleration or delay in the annual shrinkage of the Polar ice-cap must react temporarily on the distribution of the birds of the country, to the extent of two or three hundred miles perhaps in the restriction or extension of the summer range of a species, and consequently produce an effect on its migratory movements for that season.

XXIII.—*On a Collection of Birds from British East Africa and Uganda, presented to the British Museum by Capt. G. P. Cosens.*—Part III. COLII—PICI. By CLAUDE H. B. GRANT, F.Z.S., M.B.O.U. *With Field Notes by the Collector,* WILLOUGHBY P. LOWE, M.B.O.U.*

(Plate V. and Text-figure 6.)

INTRODUCTION.

THE third part of this paper deals with 41 species and subspecies, making a total of 212 to the end of the Woodpeckers. The new subspecies, all of which have recently been described in the Bulletin of the British Ornithologists' Club, are eleven in number, as follows :—

Centropus grillii wahlbergi, C. superciliosus loandæ, C. s. sokotræ, Indicator minor alexanderi, I. exilis leona, I. e. ansorgei, Pogoniulus chrysoconus rhodesiæ, Dendropicos fuscescens cosensi, D. lafresnayi loandæ, Thripias namaquus intermedius, Jynx ruficollis cosensi.

SYSTEMATIC LIST.

171. **Colius striatus affinis.** East African Striated Coly.

Colius leucotis affinis Shelley, Ibis, 1885, p. 312 : Dar-es-Salaam.

a, b. ♂ ♀ ad. Kikuyu. Sept. 21.

c. ♂ ad. Annamuget, 3700 ft. Feb. 1.

d. ♂ ad. Gubba, Pader Dist., 3100 ft. Feb. 18.

Total length in flesh : ♂ $14\frac{1}{8}$, $12\frac{3}{4}$, & 11 inches; ♀ 14 inches. Wing : ♂ 101, 99, & 96 mm.; ♀ 98 mm.

The September female is in new dress and the male is completing the moult. Both the February specimens are showing signs of wear.

[Irides brown, the male from Gubba is marked as having yellow irides ; bill bluish or bluish black, lower mandible white or bluish pink ; legs and toes red. Common.]

In naming these specimens I have had to examine all the named races of *C. leucotis*, and in working them out I find that this group and the "*striatus*" group fall naturally in together and do not appear to overlap in any part of their extreme limits. Therefore I agree with Zedlitz (*cf.* Journ. für Orn. 1910, p. 755), that *C. leucotis* and its subspecies should in future be placed under *C. striatus*; thus making *Colius striatus* the parent species and all the others geographical races of it, though I do not agree that *C. castanotus* should be included also.

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* For Part I., with map of route, see pp. 1–76, Part II. pp. 235–316.

COLIUS STRIATUS STRIATUS.

Colius striatus Gmelin, Syst. Nat. vol. i. part 2, 1789, p. 843: Cape of Good Hope.

Of this, *Colius striatus intermedius* Shelley (Ibis, 1885, p. 311: Cape Colony) is a synonym.

The cheeks are of the same colour as the top of the head; there is no black on the forehead; and the legs and toes are dark crimson. Wing: ♂ (three) 94–90; ♀ (two) 97–92; no sex (five) 97–92 mm. King William's Town, ♂ (one) 98 mm.

Range. Cape Town district eastward to the Knysna and King William's Town.

COLIUS STRIATUS NIGRICOLLIS.

Colius nigricollis Vieill. Nouv. Dict. d'Hist. Nat. vol. vii. 1817, p. 378: Malimbe, Portuguese Congo.

Of this, *Colius nigriscapalis* Rchw. (Journ. für Orn. 1892, p. 180: Buea, Cameroon Mt., *cf.* p. 218) becomes a synonym.

This race differs from *C. s. striatus* in having the forehead black; the cheeks are the same colour as the top of the head, which is rather lighter in colour than the mantle; and from *C. s. cinerascens* in lacking the white cheeks and in having the under sides of the wings richer in colour. The legs and toes are red as in *C. s. cinerascens*, and thus differ from those in *C. s. striatus*. Wing-measurements: Congo, ♀ (one) 96, no sex (three) 100–88; Shari, Ubanghi, and Welle Rivers and Nadouma, Niam Niam, ♂ (three) 93, ♀ (two) 97–95, no sex 95–91; Cameroon, coast, ♂ (one, Buca) 93, ♀ (two) 97–96, inland, ♂ (four) 96–91, ♀ (three) 95–91 mm.

Range. Kabinda or Portuguese Congo, to Cameroon and eastwards to the Shari, Ubanghi, and Welle Rivers and Niam Niam.

COLIUS STRIATUS LEUCOTIS.

Colius leucotis Rüpp. Mus. Senck. iii. 1845, p. 42, pl. 2: Province of Temben, Abyssinia.

Of this, *Colius striatus hilgerti* Zedl. (Orn. Monatsb. 1910, p. 58: Harar) and *Colius striatus erlangeri* Zedl. (op. cit.: Djam Djam, Abyssinia, *cf.* also Journ. für Orn. 1910, p. 755, pl. x.), become synonyms.

Rather paler generally and less black on the throat than *C. s. cinerascens*, mantle very distinctly barred, cheeks white, legs and toes red. Wing-measurements: Abyssinia, ♂ (four) 100–94, ♀ (seven) 102–95; Somaliland, ♂ (one) 93; Sudan and White Nile, ♂ (three) 94–92, ♀ (two) 95–93 mm.

Range. Upper White Nile and Egyptian Sudan to Abyssinia and British Somaliland.

COLIUS STRIATUS MINOR.

Colius minor Cab. Journ. für Orn. 1876, p. 94: Natal.

Of this, *Colius kirbyi* Sharpe (Bull. B. O. C. vol. xxi. 1907, p. 32: Lydenburg, E. Transvaal) must become a synonym, inasmuch as the type (a male) now before me is nothing but a semi-albino, and is not therefore a species at all. The size, wing 93 mm., agrees perfectly with normally coloured specimens.

Similar to *C. s. striatus*, but throat distinctly more blackish. Wing-measurements: Natal and Zululand, ♂ (three) 96–94, ♀ (three) 93–87, no sex (five) 96–90; Transvaal and Swaziland, ♂ (three) 93–83, ♀ (four) 92–91; Portuguese East Africa, ♂ (one) 90, ♀ (one) 92; south-east Rhodesia and Zambesi, ♂ (eight) 93–88, ♀ (four) 91; Shiré River (no sex) 82; Zomba, south Nyasaland, (one) 90 mm.

Range. Natal and Zululand northwards to the Transvaal, Portuguese East Africa, south-east Rhodesia and the Zambesi, also to Zomba in south Nyasaland.

COLIUS STRIATUS BERLEPSCHI.

Colius leucotis berlepschi Hartert in Ansorge, Under the African Sun, App. 1899, p. 333 : New Heligoland, north-east shores of Lake Nyasa, German East Africa.

Cheeks greyish white ; mantle no more distinctly barred than in *C. s. minor.* Differs from *C. s. cinerascens* in practically lacking the barring on the chest, throat and lores more dusky, no white tips to throat-feathers, rest of underparts on the average rather darker ; legs red. Wing-measurements: north Nyasaland, ♂ (six) 96–94, (one) 102, ♀ (three) 97–93 ; North-east Rhodesia and south-east Belgian Congo, ♂ (two) 101–99 mm.

Range. Country east and west of northern Lake Nyasa to North-eastern Rhodesia and south-east Belgian Congo.

COLIUS STRIATUS AFFINIS.

Colius leucotis affinis Shelley, Ibis, 1885, p. 312 : Dar-es-Salaam.

It appears to me that *Colius leucotis cinerascens* Neum. (Journ. für Orn. 1900, p. 190 : Irangi, north German East Africa) and *Colius kiwuensis* Reichw. (Orn. Monatsb. 1908, p. 191 : Lake Kiwu) are synonyms.

Differs from *C. s. berlepschi* in having whiter ear-coverts, the black throat distinctly tipped with white, and the chest clearly barred ; the mantle shows the barring, but nothing like so clearly as in *C. s. leucotis.* Legs red. Wing-measurements : north German East Africa, ♂ (three) 97–95, ♀ (one) 89, no sex (four) 96–86 ; British East Africa, ♂ (ten) 105–96, ♀ (eight) 101–92 ; Uganda, ♂ (nine) 102–62, one measures only 92, ♀ (four) 99–92 mm.

Range. Northern German East Africa, the greater part of British East Africa and Uganda, including Ruwenzori.

Nine specimens from Mombasa have rather less black on the throat than the generality of British East African specimens, they have the wing : ♂ 95–90, ♀ 92–90, no sex (four) 89–87 mm. One specimen from Zanzibar is generally rather rufous, especially below, has very little black on the throat, and has a wing of 87 mm. ; no sex.

To sum up, the wing-measurements given show that apparently no great reliance can be placed on this as a diagnostic character, but other characters prove that this group of Colies divides itself naturally into six well defined races. The southernmost forms have dark-coloured legs; these become red or coral-pink in all the races to the northward, the western race retaining the brownish ear-coverts of the parent species, whereas the eastern forms assume greyish-white or white ear-coverts, and at its most northern limits assumes a distinctly barred mantle.

Since the above has been put into print I have seen the description of *Colius striatus jebelensis* Mearns (Proc. U. S. Nat. Mus. vol. xlviii. 1915, p. 394: Gondokoro). The wing-measurement given is, in males 93–92, and in females 95–93 mm. These measurements agree so well with those of the specimens from the Sudan and White Nile mentioned above under *C. s. leucotis*, that I consider a seventh race can be recognised under Mearns' name, having a range of the Upper White Nile and Sudan.

All the measurements given by me point to the males always being somewhat larger than the females, though the reverse (except for the type specimen) is the case with Mearns' measurements.

Mr. Mearns remarks that "Zedlitz has given excellent coloured figures," *cf.* Journ. für Orn. 1910, plate 10; with this I do not altogether agree, as the good series in the British Museum collection does not bear out the tone of coloration as depicted on that plate, and this has compelled me to sink Zedlitz' two subspecies.

172. **Colius macrourus pulcher.** East African Crested Coly.

Colius macrourus pulcher Neum. Journ. für Orn. 1900, p. 190: Teita, German East Africa.

a. ♂ ad. Amala River, 5300 ft. Oct. 21.
b. ♂ ad. 20 miles S. of Baringo, 3800 ft. Dec. 24.
c. ♀ ad. Kozibiri River, 1800 ft. Jan. 16.
d. ♀ ad. Annamuget, 3700 ft. Feb. 1.

Total length in flesh: ♂ 14 & 13 inches; ♀ 14 & 13¾ inches.

Wing: ♂ 92 & 91 mm.; ♀ 92 & 89 mm.

These four specimens are fully adult, are showing signs of wear, and are beginning to moult.

[Irides red, reddish brown, or brown; bare skin round eyes red; bill red, apical point black; legs and toes red, dull red, or light claret-colour. Only a small flock seen on the Amala River, which were very wild. More plentiful in Uganda.]

Through the kindness of Mr. Rothschild and Dr. Hartert, I have been enabled to examine three specimens of *C. macrourus macrourus* from the type locality. These show that the Abyssinian bird is similar to the Senegal race, and therefore that only two races are recognisable as follows:

COLIUS MACROURUS MACROURUS.

Lanius macrourus Linn. Syst. Nat. 12th ed. 1766, p. 134: Senegal.

Colius senegalensis Gmel. (Syst. Nat. i. part 2, 1789, p. 842: Senegal River) is a synonym and cannot be raised to the rank of a race (cf. *Colius macrourus senegalensis* Gm., Neumann, Journ. für Orn. 1900, p. 190), as has already been pointed out by Oberholser in the Proc. U. S. Nat. Mus. vol. xxviii. 1905, p. 862.

As the Abyssinian birds agree perfectly with those from Senegal, *Urocolius macrourus syntactus* Oberh. (Proc. U. S. Nat. Mus. vol. xxviii. 1905, p. 863: Abyssinia) becomes a synonym. Apparently neither Neumann nor Oberholser were able to examine specimens from Senegal.

Generally much paler throughout than *C. m. pulcher*, lacking the deep ashy tint of the upper surface, especially on the head. Wing-measurements: Senegal, ♀ (three) 90–88; Lake Chad and Shari River, ♂ (two) 89 & 88, ♀ (three) 89–85; Kordofan and White Nile, ♂ (three), 90–89, ♀ (one) 95, no sex (two) 91 & 86; Abyssinia, ♂ (four) 88–86, one measures 93, no sex (three) 91–87; Somaliland, ♂ (six) 92–89, ♀ (four) 93–86 mm.

Range. Senegal and Lake Chad district, eastward to Abyssinia and Somaliland, including Kordofan and Kaka on the White Nile.

Colius macrourus pulcher Neum. op. cit.

Generally much darker throughout than *C. m. macrourus* especially on the upper surface, which is of a deep ashy tint, the under surface of the wings is also rather richer in colour. Wing-measurements: Baro River, ♂ (one) 95, ♀ (one) 91: Lado, ♂ 95; Uganda, ♂ (three) 97–92, ♀ (six) 93–87; British East Africa, ♂ (three) 97–91, ♀ (three) 89–87; northern Lake Nyasa, no sex, 99 mm.

Range. From the Baro River south to the Lado Enclave, Uganda (including Ruwenzori), greater part of British East Africa, German East Africa to north of Lake Nyasa.

This race is also somewhat larger, having in males a wing-measurement of 97–92 and in females 93–87 mm.; as against a wing-measurement in males of 93–86 and in females 95–85 in *C. m. macrourus*, though this is a character on which little reliance can be placed.

173. **Apaloderma narina narina.** Narina Trogon.

Trogon narina Steph. Shaw's Gen. Zool. vol. ix. 1815, p. 14: Auteniquoi, Knysna District, Cape Colony, *ex* Levaillant.

a. ♀ ad. Amala River, 5600 ft. Oct. 21.

b. ♀ ad. 12 miles east of Amala River, 5600 ft. Oct. 25.

c, d. ♂ ad. Mt. Maroto, 4300 ft. Jan. 28.

Total length in flesh: ♂ 13 & 12½ inches; ♀ 12½ & 12¼ inches. Wing: ♂ 134 & 130 mm.; ♀ 139 & 131 mm.

These four specimens are all adult, are in quite good dress, and agree perfectly with four specimens before me from the type locality, which have the wing in three males 135, 134, and 132, and in one female 128 mm.

This single female has the brown of the chest and throat deeper in tone than most specimens from east Africa, but some south African females agree perfectly with the east African birds.

[Irides brown: bare skin around eye blue above and blue and yellow below, mixed green and yellow in female; bill green, base yellow; legs and toes brownish flesh-colour, female rather paler. In the localities where this bird was observed, it was only seen singly or in pairs. Stomach contained locusts.]

I am inclined to agree with Sharpe that his *Hapaloderma æquatoriale* (Bull. B. O. C. vol. xii. 1901, p. 3: Efulen, Cameroon) is not really separable from *A. n. narina* (cf. 'Ibis,' 1904, p. 613). Four of the six adult males in the British Museum collection have broad markings on the wing-coverts, but the other two agree with males of *A. n. narina*, and the one adult female is practically indistinguishable. Three fully fledged young birds appear to show two distinct stages of plumage: one, a male, is moulting from the nestling plumage, which is "green above, much as in the adult, but has a number of conspicuous white spots on the coverts and inner secondaries; below, the breast is buffy, mottled and irregularly barred with green and dusky" (*cf.* Sclater, 'Ibis,' 1911, p. 721); the belly and under tail-coverts being also a mixture of white, dusky and buff, with *no* sign of the red coloration. This example is assuming a dress which is similar to the adult above, as the wing-coverts, except the outermost, have buff spots and the secondaries are mottled with buff, each feather having a broad buff tip; below, the belly and under coverts are as in the adult, but the breast and throat are deep buff, finely and regularly barred with dark green. This plumage is represented by a male and a female from Efulen. Thus there appears to be an intermediate dress between the first and the adult plumages in both sexes. The same thing is observable in south African specimens, though the green barring is not so well defined, and this character, when specimens in full second dress are available from the south, may prove sufficient to separate the Cameroon race.

The four adult males from the Gold Coast Colony show that Sharpe and Ussher's *Hapaloderma constantia* ('Ibis,' 1872, p. 181: Denkera, Fantee) is quite a good subspecies of *A. n. narina*; females, when obtained, may also show some distinctive character.

Hapaloderma rufiventre Dubois (P. Z. S. 1896, p. 999: Lake Tanganyika District) was undoubtedly described from a spirit specimen, and this accounts for the pale coloration of the underparts. A specimen of *A. n. constantia* in the British Museum that has been skinned from spirit agrees perfectly in the coloration of the underparts with Dubois' figure in the 'Synopsis Avium,' 1902, pl. ii, and convinces me that preservation in spirit of wine has been the cause of removing the always evanescent red pigment and turned it to the colour described and figured by Dubois. Therefore *H. rufiventre* becomes a synonym of *A. n. narina*.

174. **Turacus schalowi marungensis.** Marungu Long-crested Plantain-eater.

Turacus livingstonii marungensis Reichw. Vög. Afr. vol. ii. 1902, p. 52: Marungu, west of Lake Tanganyika.

a, *b*. ♂ ♀ ad. Amala River, 5300 & 5500 ft. Oct. 13 & 21.

Total length in flesh: ♂ 15½ inches; ♀ 16⅛ inches. Wing: ♂ 178 mm.; ♀ 169 mm.

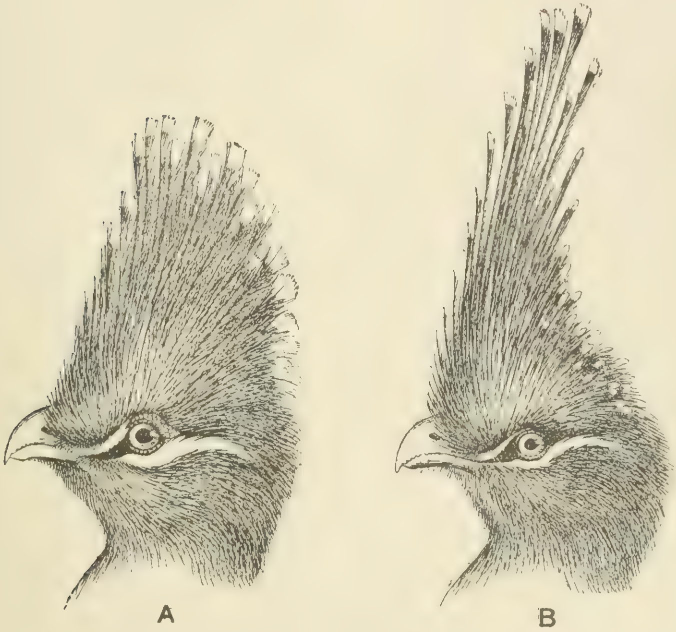
Both are in quite good dress; the female having much more blue on the long feathers of the crest than has the male; the latter is in moult in the wings and tail, and shows that the tail fades slightly into a purplish tone.

[Irides brown; eyelids red; bill red; legs and toes black. Common and nesting.]

In naming these two birds I have had to examine the large series in the British Museum, combined with the monograph by Prof. Neumann of *Turacus livingstonii livingstonii* and allies in the Nov. Zool. vol. xv. 1908, pp. 376–378, and through the kindness of Mr. Rothschild and Dr. Hartert I have had the loan of their specimens from Tring, including the type of *T. l. loitanus*.

On laying out the series it becomes at once apparent that these birds can be divided into two well defined groups by the form of the crest, one group having the crest comparatively short and graduated from the poll to the tip (text-fig. 6 A), and the other having the crest comparatively long and not graduated from the poll to the tip (text-fig. 6 B). Also the shorter crested group has the longest crest-feathers comparatively broad, whereas the longer crested group has the longest crest-feathers comparatively narrow.

Text-figure 6.



A. Head of *Turacus livingstonii livingstonii* and ally.
B. Head of *Turacus schalowi schalowi* and allies.

These two groups would therefore stand as follows with their subspecies :—

I. Crest short and graduated from poll to tip ; tail greenish.

TURACUS LIVINGSTONII LIVINGSTONII.

Turacus livingstonii Gray, Proc. Zool. Soc. 1864, p. 44 : Manganja highlands, Nyasaland.

Tail green, or but faintly washed with blue towards the tip.

Range. Gorongoza district of Portuguese East Africa, south-eastern Rhodesia and the lower Zambesi Valley to Nyasaland. I can find no evidence in support of the occurrence of this Turaco in Zululand, and do not think it can occur so far south.

TURACUS LIVINGSTONII CABANISI.

Turacus cabanisi Reichw. Journ. für Orn. 1883, p. 221: Bagamojo, German East Africa.

A careful comparison of specimens from throughout German East Africa shows that no tangible difference exists between birds from the south and north, and therefore *Turacus hybridus* Reichw. (Journ. für Orn. 1898, p. 314: northern end of Lake Nyasa) must become a synonym.

Similar to *T. l. livingstonii*, but tail more strongly washed with blue, especially towards the base.

Range. German East Africa.

II. Crest longer and not graduated from the poll to the tip; tail purplish.

TURACUS SCHALOWI SCHALOWI.

Turacus schalowi Reichw. Journ. für Orn. 1891, p. 148: Novo Redondo, Angola.

Long feathers of crest *green* before the white tips, short feathers on poll *green* with white tips, white line under eye.

Range. Angola.

TURACUS SCHALOWI CHALCOLOPHUS.

Turacus chalcolophus Neum. Orn. Monatsb. 1895, p. 87: Mt. Gurui, Irangi, German East Africa.

Long feathers of crest *blue* before the white tips, short feathers on poll *blue* with scarcely any white tips, white line under eye absent or only faintly indicated.

Range. Apparently confined to Mt. Gurui.

TURACUS SCHALOWI MARUNGENSIS.

Turacus livingstonii marungensis Reichw. op. cit.

On comparing the type of *Turacus livingstonei loitanus* Neum. (Nov. Zool. vol. xv. 1908, p. 378: Loita Mts., British East Africa) with specimens of *T. s. marungensis*, I find that they agree perfectly in every detail. The first-named certainly differs from *T. l. chalcolophus*, with which Prof. Neumann compared his specimen, but is exactly similar to *T. s. marungensis*, even to the colour of the tail. Neumann's name must, therefore, become a synonym.

Long feathers of crest *blue* before the white tips, short feathers on poll *green* with white tips, white line under eye.

Range. North-eastern Rhodesia and Nyasaland, northwards to southern British East Africa.

Prof. Neumann in the Nov. Zool. 1908, p. 377, suggested the possibility of *Turacus reichenowi* being a distinct species, and I think this should be established.

TURACUS REICHENOWI.

Corythaix reichenowi Fischer, Orn. Centralb. 1880, p. 174: Nguru-Berge, German East Africa.

Form and coloration of crest as in *T. l. livingstonii* (see also Journ. für Orn. 1885, pl. v. fig. 5, though apparently no great reliance can be placed on these figures, as the head of *C. livingstonii* figured on this plate does not agree with the type and a large series in the British Museum collection); median, greater coverts, and secondaries of wings, rump, and tail deep blue.

Range. Nguru and Dar-es-Salaam in German East Africa, southwards to Beira, Portuguese East Africa.

By dividing these Turacos into two separate groups and reinstating *T. reichenowi* with the rank of a species, the muddle that has hitherto existed is elucidated, and the geographical races are more clearly defined; also by adopting this arrangement two subspecies do not occupy the same area, as would be the case if *T. cabanisi* and *T. marungensis* were placed under *T. livingstonii*, instead of being made subspecies of two distinct species as here proposed.

175. **Turacus leucolophus.** Heuglin's White-crested Plantain-eater.

Corythaix leucolophus Heugl. Journ. für Orn. 1855, p. 65: Bahr-el-Abiad, *i. e.* Upper White Nile.

a–e. ♂ ♀ ad. Mt. Maroto, 4300 & 6000 ft. Jan. 27–28 & 30.

f. ♀ ad. Pader, 3200 ft. Feb. 18.

Total length in flesh: ♂ 16½–16 inches; ♀ 16¼–15 inches. Wing: ♂ 173–165 mm.; ♀ 169–166 mm.

All these six specimens are in moult and show strikingly the difference between faded and new feathering.

[Irides brown, eyelids red; bill yellow, base green; legs and toes black. This species was first met with in the Maroto Mts.; it was common wherever sufficient vegetation suited to its habits was found.]

The original description of this species by Heuglin appears to have been entirely overlooked; it is contained in a letter sent to L. Buvry, by whom it was communicated to the 'Journal für Ornithologie.' The description reads as follows:—"*Corythaix* mit langem weissen Federbusche und gezähntem Schnabel: daher *C. leucolophus* mihi."

176. **Turacus hartlaubi.** Hartlaub's Plantain-eater.

Corythaix hartlaubi Fischer & Reichw. Journ. für Orn. 1884, p. 52: Meru Mt., nr. Kilimanjaro, German East Africa.

a. ♂ ad. Hills south of Narossura, 7200 ft. Nov. 4.

Total length in flesh: 15½ inches. Wing: 170 mm.

This single specimen is in good dress, but slightly worn and moulting in the tail.

Fischer and Reichenow give the wing-measurement of their type as 152 mm., which seems to point to its being a young bird, as a young bird in the British Museum collection has a wing of only 157 mm., whereas all the adults exceed 160 mm.

The range of this species appears to be from northern German East Africa to central British East Africa east of Lake Victoria Nyanza.

[Irides brown; bill dull red; legs and toes greyish black. Quite common, four or five often being seen together.]

177. **Musophaga violacea rossæ.** Ross's Violet Plantain-eater.

Musophaga rossæ J. Gould, P. Z. S. 1851, p. 93 : said to have come from the western coast of Africa = Loanda, Angola.

a, *b*. ♂ ad. Amala River, 5500 & 5300 ft. Oct. 11 & 23.

Total length in flesh: 21 & 20 inches. Wing: 229 & 228 mm. Weight 1 lb.

These two specimens are in good dress and show but slight signs of wear.

[Irides brown, bare skin around eyes yellow ; bill yellow, red at base of upper mandible, base of lower dirty red ; legs and toes black. Several pairs seen.]

In the British Museum collection besides the type, which is a worn and faded caged bird, there is only one other west coast bird, an adult specimen from Loanda.

A series from the west coast may show that the east coast bird will be separable, as the two west coast birds mentioned above appear to be more violet on the upper surface than the majority of eastern specimens.

The type has a wing of 225 mm., and the Loanda bird a wing of 221 mm., neither are sexed.

178. **Chizaerhis africana zonura.** Abyssinian Plantain-eater.

Chizaerhis zonurus Rüpp. Neue Wirb. 1840, p. 9, pl. 4 : Province of Temben, Abyssinia.

a, *b*. ♂ ad. Nakwai Hills, 3950 ft. Feb. 5.

c. ? ad. Pader District, 3100 ft. Feb. 17.

Total length in flesh : 22, 21½, & 21 inches. Wing : ♂ 246 & 245 mm. ; no sex 249 mm.

These three specimens are in good dress and but slightly worn.

[Irides brown ; bill greenish yellow, slight red stripe at base of upper mandible ; legs and toes blackish or dark grey. This species was first noticed in some dense bushes near water in the Nakwai Hills, where its loud cries attracted my attention. In the Pader District it was much more plentiful.]

The range of this race appears to be from Abyssinai, to British East Africa, Uganda, and the Bahr-el-Ghazal. The typical form of the subspecies is:—

CHIZAERHIS AFRICANA AFRICANA.

Phasianus africana Lath. Index Orn. vol. ii. 1790, p. 631: Africa = Senegal, *cf.* Levaill. Hist. Nat. Prom. 1806, p. 37, pl. 20.

This form ranges from Senegal and Gambia, through Sierra Leone, the Gold Coast Colony, and Nigeria to the Shari River, French Congo.

Latham says in the Syn. of Birds, Suppl. vol. i. 1787, p. 210, that his specimen was in the British Museum, but apparently it no longer exists in that collection. Levaillant was the first to give a particular type locality for this race, and this locality I support.

179. **Corythaixoides leucogaster.** White-bellied Plantain-eater.

Chizärhis leucogaster Rüpp. Mus. Senck. iii. 1842, p. 127 : Southern Abyssinia.

a. ♂ ad. S. Guaso Nyiro, 2950 ft. Nov. 23.

b. ♂ ad. Mt. Maroto, Maroto Stream. Jan. 26.

Total length in flesh : 20½ & 19 inches. Wing : 223 & 213 mm.

These two specimens are fully adult and are showing signs of fading and wear. They have black bills ; some in the British Museum collection have greenish bills, these being taken in February, March, April, June, and October ; the black-billed birds being dated January, February, June, October, and November. One young bird, dated July, has a black bill.

Three of the four sexed green-billed birds are females, which seems to point to this being the character of the hen bird, the one marked a male probably being wrongly sexed.

The range of this bird appears to be as follows:—Somaliland, Abyssinia, British East Africa, and northern German East Africa.

[Irides brown; bill, legs and toes black. The "Go away bird" was not observed until we reached the southern Guaso Nyiro River, where it was tolerably common. It was much more plentiful in the Maroto Mountains.]

180. **Gymnoschizorhis personata leopoldi.** King Leopold's Plantain-eater.

Schizorhis leopoldi Shelley, Ibis, 1881, p. 117: Ugogo, German East Africa.

a. ♀ ad. Lemek Valley, 6600 ft. Oct. 6.

b, c. ♂ ♀ ad. & imm. Amala River, 6500 ft. Oct. 11,

Total length in flesh: ♂ & ♀ 19 inches. Wing ♂ 204 mm.; ♀ ad. 201 mm.; imm. 206 mm.

Both the two adults are worn and moulting; the immature bird is in first dress and is moulting into the adult plumage.

[Irides brown, bare skin of face black; bill, legs and toes black. This bird was common and was observed feeding on seeds.]

The range of this race appears to be as follows:—Uganda and Ruwenzori, southern British East Africa, German East Africa to north Nyasaland; whereas *Chizärhis personata* Rüpp. (Mus. Senck. iii. 1842, p. 127: Southern Abyssinia) is confined to Abyssinia.

In the Bull. B. O. C. vol. xxi. 1908, p. 94, Neumann has described a subspecies under the name *Gymnoschizorhis personata centralis*, the type locality being Kitengule, Kagera River, west of Lake Victoria Nyanza, and states that it has the forehead and crest feathers and the whole upperside darker than in *G. p. leopoldi.*

Specimens before me from the country between Lake Victoria Nyanza and Lake Albert Nyanza do not differ from those taken at Ugogo and the Amala River. Therefore I prefer to place Neumann's name as a synonym.

Certainly specimens from northern Nyasaland are slightly darker especially on the breast, but the difference being so slight, and not altogether constant, does not warrant separation.

181. **Clamator glandarius.** Great Spotted Cuckoo.

Cuculus glandarius Linn. Syst. Nat. 10th ed. 1758, p. 111: Northern Africa.

a. ♀ ad. 30 miles N.W. of Baringo, 2800 ft. Dec. 29.

Total length in flesh: 14½ inches. Wing: 187 mm.

This specimen is fully adult, is in rather worn dress and is starting to moult.

[Irides brown; bill black, lower half of lower mandible bluish; legs and toes plumbeous. Only two or three of this Cuckoo were seen in British East Africa.]

The small wing-measurement of this bird has induced me to measure the whole series of this Cuckoo in the British Museum collection, to see whether or no the south African bird which is reported to breed there (*cf.* Sclater, Fauna of S. Afr. vol. iii. 1903, p. 194) is not really a separable race, wintering, as suggested by Sclater, in central Africa. The appended measurements show that the bird that breeds in southern Europe and Asia runs in the maximum larger than the maximum of south African specimens, but in the minimum runs well into the southern bird, thus precluding any separation into two subspecies. The months of capture also show that this Cuckoo occurs usually in southern Africa during the northern winter, so that the somewhat questionable theory of double breeding must be for the present accepted.

The wing-measurements and months, as recorded in the comparatively few specimens that are dated, are as follows:—

SOUTH AFRICA (King William's Town, Orange River Colony, Transvaal, and Damaraland).

♂ ad. 208–180, juv. 189; ♀ ad. 202–181, juv. 196–188 mm.

October, November, December, January, and March.

WEST AFRICA (Gambia, Liberia, Gold Coast Colony, and Nigeria).

♂ ad. 207–198, juv. 195; ♀ juv. 207–189 mm.

September, December, February, April, and June.

CENTRAL, EAST, AND NORTH-EAST AFRICA (Suakim, Abyssinia, Bahr-el-Ghazal, Somaliland, Uganda, Upper Congo, and British East Africa).

♂ ad. 205–191, juv. 198–196 ; ♀ ad. 203–182, juv. 192–183 ; one adult not sexed reaches 216 mm.

November, December, January, February, March, and April.

TANGIER AND EGYPT.

♂ ad. 213–208, juv. 213–207 ; ♀ ad. 201, juv. 197 mm.

March, one nearly fledged young bird in the same month.

EUROPE AND ASIA (Spain, Asia Minor, Persian Gulf, and Cyprus).

♂ ad. 217–196, juv. 203 ; ♀ ad. 201–197, juv. 202 mm.

January, March, April, and May. One April female taken at Seville is breeding, and one nearly fledged young from the same locality in June.

The evidence appears to point to the southern African bird eventually becoming a smaller and specialized form.

182. **Chrysococcyx caprius.** Golden Cuckoo.

Cuculus caprius Bodd. Tabl. Pl. Enlum. 1783, p. 40 : Cape of Good Hope ; *cf.* Montbeillard, Hist. Nat. vol. vi. 1779, p. 385.

a. ♂ imm. Loita, 6300 ft. Nov. 27.

Total length in flesh : 7¾ inches. Wing : 111 mm.

This single specimen is in fresh new dress and still retains some of the secondaries and wing-coverts of the first plumage, showing that the full adult dress is assumed at the first moult.

[Irides brown, eyelids red ; bill dark brown, lower mandible whitish at base; legs and toes black. The Golden Cuckoo was only twice seen in British East Africa.]

In checking the nomenclature, I find that Boddaert's spelling of the name founded on D'Aubenton's plate (which is an excellent representation of the Golden Cuckoo) is "*caprius*," and therefore the "*cupreus*" Bodd. of authors is non-existent. Sherborn, in his 'Index Animalium,' 1902, p. 174, also quotes Boddaert's name as *Cuculus caprius*.

To be quite sure that a possible printer's error in Tegetmeier's reprint of Boddaert's Table and Sherborn's Index Anim. would account for the fact that all works, including the 'Catalogue of Birds,' 1891, p. 285, and Reichenow's Vögel Afr. vol. ii. 1902, p. 94, quote Boddaert's name as *Cuculus cupreus*, I have examined the original copy of Boddaert's Table in the Banksian Library, now in the British Museum, and find that the name is spelt as in Tegetmeier's reprint, i. e. *Cuculus caprius*.

The "*Cuculus cupreus* Bodd." of authors being non-existent, the name can no longer be confounded with the Golden Cuckoo, and has to be disposed of elsewhere.

Investigation shows that the first time the name "*cupreus*" occurs is in G. Shaw's 'Museum Leverianum,' 1792, p. 157, under the generic term *Cuculus*; see also Sherborn's Index Anim. p. 272.

The description and plate given by Shaw undoubtedly refers to the Emerald Cuckoo, and moreover to the bird that has the under tail-coverts uniformly coloured with the abdomen.

Mr. Bannerman, in 'The Ibis,' 1912, pp. 241–247, has not only gone thoroughly into the synonymy of the Emerald Cuckoo, but has shown that two distinct races exist: i. e., *Chrysococcyx smaragdineus* Swains., confined to the north and ranging from Senegal across to Abyssinia, and *C. s. intermedius* (*Chrysococcyx intermedius*) Hartl. (Birds W. Afr. 1857, p. 191: Gaboon), which breeds in South Africa and winters as far north as Gaboon and perhaps Uganda (*cf.* Bannerman, op. cit.). It is unfortunate that Hartlaub should have given his type locality so far north, but it will probably be found that in its winter quarters the South African race overlaps the northern form. The birds found on the islands of Principe and San Thomé belong to the northern form (*cf.* Bannerman, Ibis, 1914, p. 616, & 1915, p. 107).

Shaw gives the comprehensive locality of Africa, but as his name undoubtedly refers to the bird with the yellow under tail-coverts, it applies to the west coast form (*cf.*

Bannerman, Ibis, 1912, p. 244), and therefore preoccupies the *Chalcites smaragdineus* Swains. (Birds W. Afr. vol. ii. 1837, p. 191): Gambia; which locality I designate for Shaw's name.

By adopting Boddaert's name as spelt, and thus allowing Shaw's name to stand for the Emerald Cuckoo, the whole nomenclature of these two Cuckoos is in my opinion simplified, and the only real alteration that takes place is in placing *C. smaragdineus* Swains. as a synonym of *C. cupreus* Shaw.

Mr. W. L. Sclater, whom I have consulted on the point, thinks with me that this change to strict priority places the names and original descriptions on a better basis.

I agree with Bannerman that Reichenow's *Metalococcyx* is synonymous with Boie's *Chrysococcyx* (*cf.* Ibis, 1912, p. 246).

183. **Centropus grillii grillii.** Black-and-rufous Lark-heeled Cuckoo.

Centropus grillii Hartl. Journ. für Orn. 1861, p. 13: Gaboon.

a. ♂ juv. Lengototo, 6200 ft. Nov. 11.

Total length in flesh: 13¾ inches. Wing: 154 mm.

This specimen is in first dress and has assumed some of the adult feathering in the wings and tail.

[Irides yellowish brown; bill: upper mandible brown, lower flesh-colour; legs and toes dark plumbeous.]

Prof. Neumann, in the Bull. B. O. C. vol. xii. 1902, p. 75, records that he has examined the type of *Cuculus nigrorufus* Cuv. (Règ. Anim. vol. i. 1817, p. 426, which was founded on plate 220 of Levaillant, Ois. d'Afrique, vol. v. 1806, p. 78: Swart River, Cape Colony), and that "the species proved to be not an African bird, but the bird afterwards called *Centropus purpureus*," which was described by Shelley in the Catalogue of Birds in the British Museum, vol. xix. 1891, p. 348, from Sumatra.

Levaillant's plate certainly agrees better with the Sumatran bird than it does with the African, and I therefore, under the circumstances, support this re-distribution of names; this re-arrangement was apparently first proposed by Finsch (*cf.* Notes Leyden Museum, vol. xxiii. 1901, p. 156).

Since Neumann's remarks were published a young specimen has been taken by Bates in Cameroon, and two young birds by Boyd Alexander near Lake Chad; this places the occurrence of this bird on the west side of Africa beyond question.

Two races of this Cuckoo have been described, *Centropus thierryi* Reichw. (Orn. Monatsb. 1899, p. 190: Mangu, Togoland), and *Centropus grillii cæruleiceps* Neum. (Journ. für Orn. 1904, p. 380: Gandjule See, *i.e.* Lake Abaya). The former is said to differ from *C. g. grillii* in having the lesser under wing-coverts black, but this character is observable in a specimen from Nyasaland, taken with others having wholly brown under wing-coverts. Through the kindness of Mr. Rothschild and Dr. Hartert I have been enabled to examine and compare the type of *C. g. cæruleiceps* with the series in the British Museum collection, and find that it certainly differs in the coloration of the head from birds taken in German East Africa and Nyasaland, which Neumann for purposes of comparison has taken as Hartlaub's *C. grillii*, but is very closely matched by a bird from Port Natal. This Port Natal bird differs from Nyasaland specimens in having the whole head, except for the ear-coverts, glossy blue-black, without the green sheen, but not quite so deep a blue as shown in the type of *C. g. cæruleiceps*; the mantle is chestnut, rather darker than the wing-coverts, but altogether lacks the dark blackish coloration of the Nyasaland bird. The blue head is sharply defined and does not grade into the coloration of the back as in Nyasaland birds. These characters seem to me worthy of subspecific differentiation, and I have therefore proposed the following name:—

CENTROPUS GRILLII WAHLBERGI.

Centropus grillii wahlbergi Claude Grant, Bull. B. O. C. xxxv. 1915, p. 99: Umslango, Port Natal.

Type in the British Museum. ♀ not quite adult. Umslango, Port Natal. 28.11.40. Wahlberg Coll. Wing 173; culmen 27; tail 189; tarsus 38 mm.

Until, however, adults are available from Gaboon, the position of the north-eastern, eastern, and south-eastern forms cannot be accurately determined.

Attention must be drawn to the fact that Mr. Austin Roberts recently recorded a pair of *C. g. cæruleiceps* from Sabi, eastern Transvaal (*cf.* Ann. Transv. Mus. vol. iv. 1914, p. 175); considerable confusion is entailed by taking a name, and that only a subspecific (geographical) one, from north-east Africa, and fixing it on to a south African bird, thus defeating the laws governing geographical forms, and creating unnecessary synonyms.

Mr. Roberts has also remarked that the female differs from the male in being *banded*; this is of course the character of the young and immature birds. When adult, the sexes can only be distinguished by the female being slightly larger and not by the markings, as is shown by nine sexed birds in the British Museum collection from Natal and Nyasaland in black and rufous plumage, six of which are females and three males.

184. **Centropus monachus monachus.** Purple-headed Lark-heeled Cuckoo.

Centropus monachus Rüpp. Neue Wirb. 1835, p. 57, pl. 21. fig. 2: Kulla, North Abyssinia.

a. ♀ ad. Kikuyu, 6000 ft. Sept. 23.

Total length in flesh: 18 inches. Wing: 191 mm.

[Irides red; bill, legs and toes black. Quite common.]

In naming this specimen I have had to examine the whole of this group, and cannot uphold more than two races of this Cuckoo:—

CENTROPUS MONACHUS MONACHUS.

Centropus monachus Rüpp. op. cit.

Back uniformly chestnut-brown, dusky on the ends of the inner secondaries and flight-feathers.

Range. Abyssinia southwards to Kikuyu, British East Africa; not occurring near Victoria Nyanza or in the Nile Valley, where its place is taken by the following.

CENTROPUS MONACHUS FISCHERI.

Centropus fischeri Reichw. Journ. für Orn. 1887, p. 57: Niakatschi, N.E. Victoria Nyanza (Kavirondo Country).

Back chestnut-brown, mixed with or entirely washed with dark olive or blackish brown, including also the ends of the inner secondaries and flight-feathers.

Range. Eastwards of a line through the Sobat River to the east shore of Victoria Nyanza, throughout the Upper Nile Valley, Egyptian Sudan, to north Angola and Gold Coast Colony.

The large series in the British Museum collection shows that specimens from Uganda, the Upper Nile Valley, north Angola, and the mainland along the Gulf of Guinea are indistinguishable both in size and coloration, and therefore the following names become synonyms:—

Centropus monachus occidentalis Neum. Bull. B. O. C. vol. xxi. 1908, p. 77: Ogowe River, Gaboon.

Centropus monachus angolensis Neum. op. cit.: Canhoça, north Angola.

Centropus heuglini Neum. Verh. V. Intern. Ornith. Kongr. for 1910, 1911, p. 504, pl. i.: Bahr-el-Ghazal.

Shelley, in the 'Catalogue of Birds Brit. Mus.' vol. xix. 1891, p. 359, says that he considers the *C. fischeri* of Reichw. to be applicable to the young of *C. anselli* Sharpe (P. Z. S. 1874, p. 204, pl. xxxiii. fig. 1: Danger river, Gaboon), but the description and measurements agree well with the dark race of *C. monachus*, and I have therefore adopted Reichenow's name for it.

It is worthy of note that in worn specimens the tail fades to a coppery brown, approaching somewhat the coloration of *Centropus cupreicaudatus* Reichw. (Orn. Monatsb. 1896, p. 53: Angola), though that species is at once distinguished by its much larger size, and by having the rump as well as the tail always clear coppery brown, the former being barred. The range of this bird is from Angola to Lake Ngami and the Zambesi Valley to Angoniland, Nyasaland.

185. **Centropus senegalensis senegalensis.** Senegal Lark-heeled Cuckoo.

Cuculus senegalensis Linn. Syst. Nat. 12th ed. i. 1766, p. 169: Senegal.

a. ♀ ad. Kamchuru, 3250 ft. Feb. 12.

Total length in flesh : 16 inches. Wing : 168 mm.

[Irides red ; bill black ; legs and toes plumbeous, middle claw white. Four only were seen at Kamchuru.]

The large series in the British Museum collection shows that this bird ranges from Senegal to the mouth of the Congo River, eastwards across the Niger, upper Nile, upper Congo, and Uganda to Somaliland ; its place in Egypt being taken by a larger race :—

CENTROPUS SENEGALENSIS ÆGYPTIUS.

Cuculus ægyptius Gmelin, Syst. Nat. i. 1788, p. 420 : Egypt.

Size much larger than in *C. s. senegalensis* ; top of head and nape much duller and more sooty in colour ; mantle and inner secondaries olive-brown, contrasting with the chestnut flight-feathers.

Range. Egypt only.

And to the south its place is taken by :—

CENTROPUS SENEGALENSIS FLECKI.

Centropus flecki Reichw. Orn. Monatsb. 1893, p. 84 : Nukana, in northern Bechuanaland Protectorate.

Very similar to *C. s. senegalensis,* but mantle and inner secondaries generally clear chestnut, as are the flight-feathers ; in *C. s. senegalensis* the mantle and inner secondaries are more or less washed with olivaceous, contrasting slightly with the flight-feathers ; size on the average perhaps rather larger than *C. s. senegalensis,* but not approaching anywhere near to the size of *C. s. ægyptius.*

Range. North of Lake Nyasa and North-eastern Rhodesia, to Mashonaland, Matabeleland, Lake Ngami, Zambesi River, and the Transvaal.

The good series in the British Museum collection shows that a wholly black bill is assumed by this bird, but whether this is due to age or season is not clear.

186. **Centropus superciliosus superciliosus.** White-eye-browed Lark-heeled Cuckoo.

Centropus superciliosus Hempr. & Ehr. Symb. Phys. 1828, fol. *r*: Southern Arabia.

a. ♂ imm. Amala River, 5400 ft. Oct. 18.
b. ♀ imm. Narossura River, 5000 ft. Nov. 14.
c. ♂ imm. Weiwei River, 3000 ft. Jan. 8.
d. ♀ imm. Slopes of Nakwai Hills, 3600 ft. Feb. 8.

Total length in flesh: ♂ 15¼ & 14½ inches; ♀ 15½ & 15 inches. Wing: ♂ 160 & 152 mm.; ♀ 154 & 147 mm.

These four specimens still retain the barred wings and tail of the immature dress, the rest of the plumage being similar to the adults. All are worn, the October and January birds are assuming by a moult the adult feathering of the wings and tail.

[Irides red; bill black; legs and toes bluish; the February bird having the bill bluish-horn with the culmen black. Quite common.]

Whilst naming these specimens I have taken the opportunity to examine the large series in the British Museum, both of this species and of *Centropus burchellii* Sw. (Anim. Menag. 1838, p. 321: South Africa, *ex* Burchell, Cape Colony), with the immature of which *C. superciliosus* appears always to have been confounded, at least as regards its occurrence south of the Zambesi. Mr. W. L. Sclater, in Fauna of S. Afr. vol. iii. 1903, p. 208, has questioned previous references to the occurrence of *C. superciliosus* in southern Africa.

That *C. superciliosus* comes within the South African limit is shown by specimens taken on the Zambesi, but I can find no evidence of its occurrence farther south. The birds named *C. superciliosus* in the British Museum collection from southern Africa are undoubtedly the immature of *C. burchellii*, which has in this stage a distinct eye-streak; a good example being the female obtained by myself at

Coguno, Port. East Africa, which has been named *C. superciliosus*, cf. Sclater, Ibis, 1911, p. 735, but which, as shown by two blue feathers on the nape, I take to be the immature of *C. burchellii.*

Although the immature *C. burchellii* can and has been confounded with *C. superciliosus*, a series shows that characters are present by which the species can be separated. In the immature of *C. burchellii* the eye-stripe is nearly always present, but only in exceptional instances is it as broad as in *C. superciliosus* ; where streaks are present on the nape and mantle, they do not usually extend so far down the back as in *C. superciliosus*, also the underparts are not streaked and banded ; in specimens where the underparts are more or less streaked and banded, thus approaching *C. superciliosus* in this respect, it will usually be found that the streaks on the nape and mantle are altogether lacking or only few in number.

On comparing young birds in first dress of *C. burchellii* from southern Africa with young birds in first dress of *C. superciliosus* from Nyasaland and Uganda, no distinguishing characters can be noted, both having the head and nape mottled and streaked, more or less uniform with the back, though certainly some young *C. burchellii* have blackish on the head and nape, and the difficulty would appear to arise as to how birds in this dress can be separated in localities where they occur together ; but young birds of *C. burchellii* from the northernmost limits of its range have the top of the head, the ear-coverts, and the nape *black*, with a more or less distinct eye-streak and some streaks on the nape, thus being clearly separable from the young of *C. superciliosus* from the southernmost limits of its range.

The races and ranges of the two species appear to be as follows:—

CENTROPUS SUPERCILIOSUS SUPERCILIOSUS.

Centropus superciliosus Hempr. & Ehr. op. cit.

Mantle and inner secondaries earthy brown, top of head and ear-coverts a little darker than the mantle.

Range. South Arabia, Somaliland, Egypt, Abyssinia, British East Africa, Uganda, German East Africa, island of Zanzibar, south to Nyasaland and the Zambesi, where it appears to be scarce.

CENTROPUS SUPERCILIOSUS LOANDÆ.

Centropus superciliosus loandæ Claude Grant, Bull. B. O. C. vol. xxxv. 1915, p. 54; nr. Dalla Tando, northern Angola.

Generally much darker than *C. s. superciliosus*; top of head and ear-coverts almost black, nape of neck also almost black, the white streaks thus appearing much more distinct, mantle and inner secondaries chestnut-brown, the latter washed with olive.

Type in British Museum: ♂ ad. Nr. Dalla Tando, north Angola. 21. viii. 1908. Dr. W. J. Ansorge coll.

Range. Angola to mouth of Congo River, eastwards to eastern Belgian Congo and North-eastern Rhodesia.

Many of the British East African, German East African, and Uganda specimens are somewhat intermediate between typical south Arabian birds and this race, as also are one or two North-eastern Rhodesian specimens, though the majority from this latter locality agree with the typical west coast form. Thus, when the whole series is laid out, it can be seen that a more or less gradual change takes place from the east to the west, so that it does not appear that any intermediate forms can be separated, but only the two extremes, which differ markedly from each other in the characters given.

CENTROPUS SUPERCILIOSUS SOKOTRÆ.

Centropus superciliosus sokotræ Claude Grant, Bull. B. O. C. vol. xxxv. 1915, p. 55: Adho Dimellus, Sokotra.

Nape, sides of neck, and all the underparts much paler than in *C. s. superciliosus*, almost lacking the strong buff coloration of the typical form, which thus gives the Sokotra bird a very grey appearance.

Type in British Museum: ♂ ad. Adho Dimellus, Sokotra. 5. ii. 1899. W. R. Ogilvie-Grant & H. O. Forbes coll.

Range. Confined to the Island of Sokotra.

Therefore three well-marked forms of *C. s. superciliosus* are recognisable ; the two forms of *Centropus burchellii* are as follows :—

CENTROPUS BURCHELLII BURCHELLII.

Centropus burchellii Swains. op. cit.

Of this *Centropus natalensis* Shelley (Ibis, 1882, p. 246 : Natal) is a synonym.

Young in first dress have the head, ear-coverts, and nape *mottled and streaked* as the mantle, wing-feathers banded.

Judging by the specimens collected by myself, the sexing of which I think I can rely on, the adult female has the head, ear-coverts, and nape dullish sooty-black ; the adult male, on the other hand, has these parts metallic blue or greenish black ; also the female is somewhat larger than the male.

More than one stage of dress is assumed before the full adult is reached, two of which seem to be recognisable as follows, though many more, especially carefully sexed specimens, are required before any definite conclusions can be arrived at.

From the first young dress a second plumage appears to be assumed, having a more or less distinct eye-streak, head, ear-coverts and nape blackish, the nape and upper back streaked and the wing-feathers banded.

From this dress apparently a third plumage is donned :— Eye-streak very imperfect, more confined to between the eye and the base of the bill, nape and upper back generally less streaked than in the second plumage, the wing-feathers being as in the adult. After this the bird appears to assume the full adult dress.

Range. Cape Colony, Natal, north to the Transvaal and the Inhambane district of Portuguese East Africa.

Should the female of *C. b. burchellii* prove to be constantly different in the coloration of the head from the female of *C. b. fasciipygialis*, then the immature female from Coguno, Inhambane district, would belong to the northern race, as the two blue feathers on the nape appear to be metallic and not sooty-black.

CENTROPUS BURCHELLII FASCIIPYGIALIS.

Centropus fasciipygialis Reichw. Orn. Monatsb. 1898, p. 23: Quilimane, Portuguese East Africa.

In his original description Prof. Reichenow has compared this bird with *C. senegalensis*, but in the Vög. Afrikas, vol. ii. 1902, p. 61, he has placed it as a race of *C. burchellii*; in this I agree with him.

Young in first dress have the head, ear-coverts and nape *black*, and the wing-feathers rather less banded than the young of *C. b. burchellii.*

The adult female has the head metallic blue-black, as in the male; the adult male not being distinguishable from the adult male of *C. b. burchellii.*

This race appears to go through the same stages of plumage as does *C. b. burchellii.*

Range. Beira and Zambesi Valley, northwards to southern German East Africa and southern Nyasaland.

Centropus superciliosus superciliosus and its two races appear to assume only one intermediate stage of dress before the adult is reached; this being identical with the full adult but having the wing-feathers banded.

Since the above has been written, my attention has been drawn to Mr. Roberts' paper in the Ann. Transv. Mus. vol. iv. 1914, where on page 175 he has also come to the conclusion that the records of *C. superciliosus* in southern Africa are referable to the immature of *C. burchellii.*

He has also described a new form allied to *C. superciliosus* under the name *Centropus pymi*, the type-locality of which is apparently given as Draaibosch, Kaffraria, though the type is not designated. Burchell's specimen was probably also secured very near this locality.

On page 175 the bird is merely said to be larger than *C. superciliosus*, but on page 177 a fuller description is given; without seeing Mr. Roberts' specimens it would appear from this description that *C. pymi* is one of the immature dresses of *C. burchellii*; also, the measurements given in the table do not differ appreciably from those of *C. burchellii.*

187. **Ceuthmochares æreus australis.** South African Coucal.

Ceuthmochares australis Sharpe, P. Z. S. 1873, p. 609: Natal.

a. ♀ ad. Nakwai Hills, 3500 ft. Feb. 7.

Total length in flesh: 13⅛ inches. Wing: 123 mm.

This single specimen agrees perfectly with birds from Natal, and is in somewhat worn dress.

[Irides red; bill yellow, base of culmen black; legs and toes black. Appears to be rare, as this was the only specimen seen during the whole trip.]

In naming this bird I have examined all the specimens of this group in the British Museum, and can recognise four distinct races as follows:—

CEUTHMOCHARES ÆREUS ÆREUS.

Cuculus æreus Vieill. Nouv. Dict. d'Hist. Nat. vol. viii. 1817, p. 229: Malimbe, Portuguese Congo.

Head dark grey, not washed with violet; back, wings, and tail steel-blue, the tail in some specimens having a wash of greenish; tail below washed with violet, but not so deep as in *C. æ. flavirostris*; rest of underparts somewhat paler than in *C. æ. flavirostris*.

Range. Cameroon and Gaboon, French Congo to Bembe in northern Angola; also the island of Fernando Po.

CEUTHMOCHARES ÆREUS FLAVIROSTRIS.

Zanclostomus flavirostris Swains. Birds W. Afr. vol. ii. 1837, p. 183; West Africa=Senegal.

Head dark grey, washed with violet; back, wings, and tail deep violet-blue, tail below washed with purple; rest of underparts grey, faintly washed with violet.

Range. From Senegal to the Gold Coast Colony.

CEUTHMOCHARES ÆREUS AUSTRALIS.

Ceuthmochares australis Sharpe, op. cit.

Head olive-grey; back, wings, and tail clear bronze-green, tail below bronze-green; rest of underparts buff or ochraceous.

Range. Natal, Zambesi, Portuguese East Africa, Nyasaland, British East Africa to Nakwai Hills in Uganda.

CEUTHMOCHARES ÆREUS INTERMEDIUS.

Centhmochares intermedius Sharpe, Journ. Linn. Soc., Zool. xvii. 1884, p. 432 : Semmio, Bahr-el-Ghazal.

Head much paler grey than in *C. æ. æreus* ; back, wings, and tail dark, but distinctly washed with bronzy green ; tail below more washed with steel-blue ; rest of underparts as in *C. æ. æreus.*

Range. Uganda (Entebbe, Mabira, Msozi and Fort Portal) to Semliki Valley, Bahr-el-Ghazal, and Welle and Shari Rivers.

188. **Indicator indicator.** Black-throated Honey-Guide.

Cuculus indicator Gmelin, Syst. Nat. vol. i. 1788, p. 418 : Interior of Africa. " A quelque distance du Cap de Bonne Espérance," *cf.* Buffon, vol. vi. 1779, p. 392.

a. ♀ juv. 12 miles E. of Amala River, 5900 ft. Oct. 26.
b. ♂ ad. West of Mt. Leganisho, 5600 ft. Oct. 28.
c. ♀ juv. Mt. Maroto, 4300 ft. Jan. 28.

Total length in flesh : ♂ 8½ inches ; ♀ 7½ & 7¼ inches. Wing : ♂ 114 mm. ; ♀ 110 & 104 mm.

The male is fully adult and shows slight signs of wear ; the two females are in the dress of *Indicator major*, are somewhat worn, the yellow colour having faded from the breast and abdomen, and are starting the moult in the wings and tail.

[♂. Irides light brown ; bill pink, with white tip ; legs and toes greyish brown ; in the females the bill is black, the irides brown. Tolerably common and very noisy ; several were seen in young dress both in Uganda and British East Africa.]

A careful examination and comparison of the large series in the British Museum collection, both of *Indicator indicator* and *Indicator major* Steph. (Gen. Zool. vol. ix. 1815, p. 139, pl. 27 : Auteniquoi, Knysna Dist., Cape Colony), shows that the latter is merely the first plumage birds of the former, and that the names are therefore synonymous, as was first pointed out by Boyd Alexander (Bull. B. O. C. vol. xxi. 1908, p. 91).

The evidence of this is that all the birds having olive backs and yellow underparts (*I. major*) are always in fresh plumage and have a young appearance; when the dress shows signs of wear the birds are moulting and are assuming feathering in the wings, tail and back exactly resembling the coloration of these parts in *I. indicator*. In the males at this stage black is replacing the yellow on the throat, and a yellow patch is appearing on the shoulders; in more advanced specimens the dress is identical with that of *I. indicator*, except for the remains of the feathering of *I. major* on the top of the head, wing-coverts, throat, and chest.

The same sequence of plumages is to be found with the female.

Moreover, in the whole series of *I. indicator* I cannot find one specimen that could be called a first plumage bird; this is quite a striking point. In every case, too, where worn specimens of *I. major* are examined the birds are assuming the darker dress of *I. indicator*, so that the logical conclusion is that *I. major* is nothing but the young bird of *I. indicator*.

I can see no characters on which races of this bird can be separated, so that the following names will have to become synonyms:—

Indicator flavicollis Swains. Birds W. Africa, vol. ii. 1837, p. 198: Senegal.

Indicator barianus Hartl. Orn. Westafr. 1857, p. 274: Bari country, Upper White Nile, *cf.* Heugl. Sitzb. Ak. Wien, 1856, p. 300 (nom. nud.), also J. f. O. 1864, p. 33 (descrip.).

Indicator böhmi Reichw. Journ. für Orn. 1891, p. 39: East Africa.

189. **Indicator minor teitensis.** East African Little Honey-Guide.

Indicator minor teitensis Neum. Journ. für Orn. 1900 p. 195: Bura, Teita, British East Africa.

a. ? ad. Mt. Maroto, Maroto Stream, 3700 ft. Jan. 25 Total length in flesh: 6¼ inches. Wing: 90 mm.

This single specimen, though not sexed, is apparently a male, judging by the white feathers at the base of the upper mandible and the moustachial streak. It is in good plumage.

[Irides brown ; bill black ; legs and toes plumbeous.]

In naming this bird I have examined the whole series in the British Museum collection of these small, thick-billed Honey-Guides, and I find that they fall naturally into three groups; these groups with their races and distribution being as follows :—

INDICATOR MINOR MINOR.

Indicator minor Steph. Gen. Zool. vol. ix. 1815, p. 140: Cape of Good Hope, *ex* Levaillant.

Of this, *Indicator minimus* Temm. Pl. Col. 1822, pl. 542 : South Africa, *ex* Levaillant : *Indicator buphagoides* Leadb. Trans. Linn. Soc. vol. xvi. 1829, p. 91 : Interior of Africa ; and *Indicator apivorus* Licht. Nom. Av. 1854, p. 78 : Kaffirland (nom. nud.), are synonyms.

Top of head washed with olivaceous ; underparts pale grey washed with olive. Wing in males 95–89 mm. ; in females 86–83 mm.

The males are always larger than the females, the latter lacking the white feathering at the base of the upper mandible, or having it only faintly indicated, and the moustachial streak is by no means so clearly defined.

Range. Cape Colony and Natal northwards to southern Nyasaland and northern Angola.

The pair before me from Angola agree very well with Cape Colony specimens, being perhaps slightly darker on the chest, and the three from Damaraland are slightly paler on the top of the head than specimens from further south ; however, as slight individual variation occurs in Cape Colony and Natal birds, these differences do not appear to be geographical.

INDICATOR MINOR DIADEMATUS.

Indicator diadematus Rüpp. Neue Wirb. 1835, p. 61 : Abyssinia.

Rüppell's description agrees well with the Abyssinian form of *I. minor*, which has been named *Indicator lovati* O.-Grant (Bull. B. O. C. vol. x. 1900, p. 39: Gelongol, Abyssinia). Therefore *I. lovati*, the type of which is in the British Museum, becomes a synonym.

This form differs from *I. m. minor* in having the top of the head and the whole of the underparts much darker grey and with little or no olive wash. Wing: ♂ 88 & 86 mm.; ♀ 89–86–84 mm.; the two males are undoubtedly immature.

Range. Abyssinia and Somaliland.

The Somaliland bird differs slightly from the two Abyssinian specimens in having the upper parts rather paler olive-green; and a much larger series may show that *Indicator exilis erlangeri* Zedl. (Orn. Monatsb. 1913, p. 59: S. Somaliland; compared to *I. m. teitensis*, and wing given as 83–81 mm.) can be upheld, though the evidence before me points to this name becoming a synonym.

INDICATOR MINOR TEITENSIS.

Indicator minor teitensis Neum. op. cit.

Differs but very slightly from *I. m. minor*, being slightly darker on the upper surface and rather darker grey beneath. Wing: ♂ 91 & 90 mm.; ♀ 87–82–81 mm.

Neumann gives the wing of his type as 79 mm., which points to an immature bird and comes within the wing-measurement of the *I. exilis* group; there are, however, two specimens in the British Museum collection bearing in Neumann's handwriting the name of his new subspecies.

Range. Nyasaland and German East Africa to British East Africa and Uganda, across to Lake Chad and Benue River.

Southern specimens run very close to the Cape form and northern specimens very close to the Abyssinian form, and a larger series may show that the dividing line will be found somewhere across Uganda and British East Africa, and that *I. m. teitensis* should be placed as a synonym and not upheld as a race.

INDICATOR MINOR ALEXANDERI.

Indicator minor alexanderi C. Grant, Bull. B. O. C. xxxv 1915, p. 99: Gambaga, Gold Coast Colony.

Size as in *I. m. minor,* from which it differs in having the top of the head and nape clearer grey without the olive wash, the whole of the underparts clear grey without any olive tinge, and the markings on the wings and back rather more clearly defined and brighter in colour.

Type in British Museum: ♂ ad. Gambaga, Gold Coast Hinterland. 28. xii. 1900. Boyd Alexander coll. Wing 95, culmen 12, tail 64, tarsus 11 mm. Named in honour of the late Lieut. Boyd Alexander.

Wing: ♂ 95 mm.; ♀ 90 mm.

Range. Gold Coast Colony.

INDICATOR CONIROSTRIS CONIROSTRIS.

Melignothes conirostris Cass. Proc. Acad. Philad. 1856, p. 156; Moonda River, Gaboon; id. 1859, pl. ii.

Of this, *Indicator occidentalis* Hartl. (Birds W.-Afr. 1857, p. 185) is a synonym.

Head and nape dark grey, faintly washed with olive. Wing: ♂ 93–88 mm.; ♀ 88–79 mm.

Range. Gaboon north of Ogowe River, and Cameroon.

INDICATOR CONIROSTRIS USSHERI.

Indicator ussheri Sharpe, Bull. B. O. C. vol. xii. 1902, p. 80: Fantee.

Head and nape dark olive-green, similar to back. Wing 93 & 92 mm., in two examples; neither is sexed, the first being the type.

Range. Gold Coast Colony.

INDICATOR EXILIS EXILIS.

Melignothes exilis Cass. Proc. Acad. Philad. 1856, p. 157: Moonda River, Gaboon; id. 1859, pl. i. fig. 1.

Of this, *Indicator pygmæus* Reichw. (Journ. für Orn. 1892, p. 132: Bukoba, Victoria Nyanza; compared with *I. minor* and wing given as 80 mm.) appears to be a synonym.

Top of head dark grey, strongly washed with olive, rest of upper parts having the markings broad and strongly defined; below, chin white with black specks; rest of underparts, except abdomen and under tail-coverts, dark olive.

The male differs from the female in having a well-defined white band at the base of the upper mandible and a black moustachial streak.

Wing: ♂ 80–74 mm.; ♀ 70–65 mm.

Cassin gives the wing-measurement of his type as 2½ inches = 63 mm.

Range. North Angola to Cameroon, eastwards to Uganda (Ruwenzori and Ankole).

INDICATOR EXILIS WILLCOCKSI.

Indicator willcocksi Alex. Bull. B. O. C. vol. xii. 1901, p. 11: Prahou, Gold Coast Colony.

Differs from *I. e. exilis* in being much greener on the top of the head and in having the underparts paler olive, and indistinctly streaked. Wing: ♀ (the type) 69 mm.

Range. Gold Coast Colony.

INDICATOR EXILIS POENSIS.

Indicator poensis Alex. Bull. B. O. C. vol. xiii. 1903, p. 33; Bakaki, Fernando Po.

Differs from *I. e. exilis* in being considerably smaller; top of head grey, rest of upper plumage less bright and markings not strongly defined, and the under surface greyer and paler. Wing: ♂ (the type) 66 mm.

INDICATOR EXILIS LEONA.

Indicator exilis leona C. Grant, Bull. B. O. C. xxxv. 1915, p. 100: Sierra Leone.

Differs from *I. e. exilis* in being smaller and having the mantle more uniform olive, the markings being only faintly indicated, top of head slightly darker, and under surface of a deeper tone especially on the chest; from *I. e. willcocksi* (which cuts this new race off geographically from *I. e. exilis*) it differs in the more uniform back and considerably darker underparts without any streaking.

Type in British Museum: ♂ ad. Sierra Leone. 7. iii. 11. W. P. Lowe coll. Wing 70, culmen 10, tail 43, tarsus 11·5 mm.

Range. Sierra Leone.

INDICATOR EXILIS ANSORGEI.

Indicator exilis ansorgei C. Grant, Bull. B. O. C. xxxv. 1915, p. 100: Gunnal, Portuguese Guinea.

Differs from *I. e. exilis* in having the upper parts less strongly marked, the head paler grey without the olive wash, and the whole under surface greyer and paler. The male shows no black specks on the chin and there are but one or two in the female. Very similar to *I. e. poensis*, from which it differs in its much larger size. Wing: ♂ 80 mm.; ♀ 71 mm.

Type in British Museum: ♂ ad. Gunnal, Portuguese Guinea. 4. vi. 09. W. J. Ansorge coll. Wing 80, culmen 10·5, tail 48, tarsus 12·5 mm. Named in honour of the late Dr. W. J. Ansorge.

Range. Portuguese Guinea.

I am quite unable to fix satisfactorily Heuglin's *Melignothes pachyrhynchus* (Journ. für Orn. 1864, p. 266: Bongo, Bahr-el-Ghazal). In the Orn. N.O.-Afrika, 1871, p. 773, Heuglin considers it to be a synonym of *I. minor* and mentions that the original type is no longer in the Stuttgart Museum.

Shelley in the Catalogue of Birds in the British Museum, vol. xix. 1891, p. 9, also places this name as a synonym of *I. minor*; but Reichenow in the Vög. Afrikas, vol. ii. 1902, p. 112, puts it as a doubtful synonym of his *I. pygmæus*. The description certainly fits *I. minor*, and Heuglin's name might well remain a synonym of that species, if it was not for the apparently small size of Heuglin's specimen, the wing being given as 2″ 11‴ (German inches) = 76 mm., and that of a male.

190. **Prodotiscus regulus.** Brown Honey-Guide.

Prodotiscus regulus Sund. Œfv. Ak. Förh. 1850, p. 109: Caffraria inferior et superior; *ex* Wahlberg.

a. ♂ ad. Southern Guaso Nyiro, 2900 ft. Nov. 23.

Total length in flesh 5½ inches. Wing 80 mm., which exactly equals the wing-measurement given by Sundevall for his type.

[Irides brown; bill black; legs and toes dark grey. This specimen was the only one seen.]

A somewhat worn specimen, and moulting on the head; the white outer tail-feathers are broadly tipped.

The series in the British Museum collection shows that some variation occurs in the markings of the tail, some specimens having pure white under tail-feathers, others having broad tips and even having the dark colour running up the edge of the inner webs, these variations being found in the same locality.

It would therefore appear that one of the characters given by Mr. Ogilvie-Grant for his *Prodotiscus peasii* (Bull. B. O. C. vol. xi. 1901, p. 67 : Unji, Abyssinia) is of little or no value, and the central tail-feathers are not lighter than some specimens of *P. regulus*; but as the wing measures in the single type-specimen 83 mm. against 80–75 mm. in *P. regulus, P. peasii* may prove to be a somewhat larger race confined to north-east Africa.

Prodotiscus zambesiæ Shelley (Ibis, 1894, p. 8: Zomba, Nyasaland), the type of which is in the British Museum, has an olive-green back and wings, and has nothing to do with *P. regulus,* and cannot therefore be placed as a synonym (*cf.* Reichw. Vög. Afrikas, vol. ii. 1902, p. 114). It is undoubtedly allied to *Prodotiscus* (*Hetærodes*) *insignis* Cass. (Proc. Acad. Philad. 1856, p. 157 : Moonda River, Gaboon ; id. 1859, pl. i. fig. 2) ; as are also *Indicator emini* Shelley (P. Z. S. 1888, p. 43, pl. iii. : Wadelai), the type of which is in the British Museum, *Prodotiscus ellenbecki* Erl. (Orn. Monatsbr. 1901, p. 182 : Daroli (Arrussi), Abyssinia), and *Prodotiscus reichenowi* Madarasz (Ann. Mus. Hung. vol. ii. 1904, p. 206 : Moschi, German East Africa); but the insufficient series before me does not allow me to discuss these forms.

191. **Lybius leucocephalus.** White-headed Barbet.

Laimodon leucocephalus Defil. Rev. et Mag. Zool. 1853, p. 291 : White Nile, between 3° & 4° N. latitude.

a. ♂. N.E. slopes of Nakwai Hills, 3600 ft. Feb. 8.
b. ♂. Pader District, 3100 ft. Feb. 18.

Total length in flesh $8\frac{1}{8}$ & $7\frac{1}{4}$ inches. Wing 91 & 90 mm. Both these specimens have the appearance of young birds.

[Irides brown; bill black, one having the base mottled with white; legs and toes greyish black or dark grey. Two or three pairs seen.]

Reichenow in the 'Vög. Afrikas,' vol. ii. 1902, p. 123, has suggested that *Pogonorhynchus albicauda* Shelley (Ibis, 1881, p. 117: Ugogo, German East Africa) and *Melanobucco abbotti* Richm. (Auk, 1897, p. 164: Taveta, British East Africa) are merely stages of plumage of *Pogonorhynchus senex* Reichw. (Journ. für Orn. 1887, p. 59: Ikanga in Ukamba), the last-named being the full adult. I agree that the evidence points to that conclusion being correct, and moreover consider that a much larger series will show that *L. leucocephalus* is *L. senex* in its first dress. Should this prove correct, *L. leucocephalus* as the oldest name would stand for the species. Until this question is finally settled, the status of *Lybius leucocephalus usukumæ* Neum. (Bull. B. O. C. vol. xxi. 1908, p. 46: Kagehi, Usukuma, north-west German East Africa) cannot be defined. *Pogonorhynchus leucogaster* Bocage (Jorn. Acad. Real Lisboa, 1877, p. 63: Quillengues, Benguela) is allied to the above and appears to differ only in having the under wing-coverts pure white; but I have not been able to examine specimens from Angola.

192. **Lybius tridactylus.** Red-headed Barbet.

Loxia tridactyla Gmelin, Syst. Nat. i. pt. 2, 1789, p. 866: Abyssinia.

a, b. ♂ ad. Kamchuru, 3200 & 3250 ft. Feb. 10 & 12.

Total length in flesh: 7 inches. Wing: 85 & 82 mm.

Both these specimens are showing signs of wear.

[Irides brown; bill, legs, and toes black. This conspicuous bird is tolerably common.]

Phytotoma abyssinica Lath. (Ind. Orn. Suppl. i. 1801, p. xlix: Abyssinia) is a synonym, and I also place as a synonym *Lybius tridactylus ugandæ* (Berger, Orn. Monatsb. 1907, p. 201: Nimule, Uganda, wing given as 78 mm.), as the characters given do not appear to be substantiated by the good series in the British Museum collection.

193. **Tricholæma melanocephala stigmatothorax.** Brown-throated Barbet.

Tricholæma stigmatothorax Cab. Journ. für Orn. 1878, p. 205 : Ndi, Taita, *cf.* p. 240.

a, b. ♂ ♀ ad. Kozibiri River, 2400 ft. Jan. 20.

Total length in flesh : ♂ 5½ inches ; ♀ 5¼ inches. Wing : ♂ 68 mm.; ♀ 65 mm.

These two specimens are rather worn, but agree with others in the British Museum collection from the type locality.

[Irides brown ; bill black ; legs and toes dark plumbeous. Two or three seen in the stunted bushes.]

The following races of this Barbet can be recognised :—

TRICHOLÆMA MELANOCEPHALA MELANOCEPHALA.

Pogonias melanocephala Cretz. Atlas in Rüpp. Reise nörd. Afr., Zool. 1826, p. 41, pl. 28 : Kordofan.

Of this, *Pogonias bifrenatus* Hempr. & Ehr. (Symb. Phys. 1828, pl. 8. figs. 1 & 2 : Abyssinia) is a synonym.

Top of head, ear-coverts, and throat glossy black.

Range. Egyptian Sudan, Abyssinia, and western Somaliland.

TRICHOLÆMA MELANOCEPHALA STIGMATOTHORAX.

Tricholæma stigmatothorax Cab. op. cit.

Top of head, ear-coverts, and throat brown.

Range. Northern German East Africa, through British East Africa to Uganda.

TRICHOLÆMA MELANOCEPHALA BLANDI.

Tricholæma blandi Lort Phillipps, Bull. B. O. C. vol. vi. 1897, p. xlvii : Goolis Mts., Somaliland.

Top of head, ear-coverts, and throat brown ; feathers of forehead and throat distinctly tipped with whitish.

Range. Central and eastern Somaliland.

I am by no means sure that the following species should not also be considered as a subspecies of *T. melanocephala.*

TRICHOLÆMA AFFINIS.

Pogonorhynchus affinis Shelley, Proc. Zool. Soc. 1879, p. 680 : Weenen, Natal.

Size much larger, streak over eye yellow, the hinder part being white; in *T. m. melanocephala* the eye-streak is white for the whole of its length.

Range. Griqualand East and Natal.

I am unable through lack of material to place a form of *T. affinis*, described by Reichenow in the Orn. Monatsb. 1893, p. 30, from the Wembere Steppe, East Africa, under the name *Tricholæma flavibuccale*; it appears to differ in its smaller size, wing 70 against 79 mm., and in having the anterior part of the white cheek-stripe, as well as the anterior part of the eye-streak, yellow.

191. **Tricholæma lacrymosa.** Spotted-flanked Barbet.

Tricholæma lacrymosa Cab. Journ. für Orn. 1878, p. 205 : Adi River, British East Africa – German East Africa boundary.

a. b. ♂ ♀ ad. Amala River, 5300 & 5500 ft. Oct. 11 & 21.

c. ♀ ad. Mt. Maroto, Maroto Stream, 3700 ft. Jan. 25.

d. ♀ ad. Nakwai Hills, 3800 ft. Feb. 6.

Total length in flesh : ♂ 6 inches ; ♀ 6, 5¾, 5¼ inches. Wing : ♂ 72 mm. ; ♀ 69–66 mm.

These four specimens are showing signs of wear, the male perhaps having the head and throat brighter than the females.

[♂. Irides bright yellow; bill black; legs and toes dark plumbeous. ♀. Irides red, reddish brown, or brown; bill black; legs and toes black, greyish black, or very dark brown. Common. On October 21 a pair were seen at a nest containing young, which was situated in a dead branch overhanging our tents.]

The pair from Amala River can be taken as typical specimens of this species, and have the underparts washed with yellow and the spots rounded. These are the characters given by Mr. Ogilvie-Grant for *Tricholæma radcliffei* (Bull.

B. O. C. vol. xv. 1904, p. 29 : Mulema, Uganda), which must therefore become a synonym.

Some more northern specimens show the pear-shaped spot on the under surface; but as specimens with both rounded and pear-shaped spots are found in the same locality, I do not think that this character is of any subspecific value.

In the Bull. B. O. C. vol. xxi. 1908, p. 47, Neumann has described a race of this bird under the name *Tricholæma lacrymosum ruahæ*; the characters on which it is founded are the rounded spots of the underside, which, as I have shown above, appear to be of little subspecific value, and the ground-colour is nearly pure white; but specimens from the southern parts of German East Africa are not available for comparison, so I am unable to give an authoritative opinion on the validity of this form.

195. **Tricholæma diademata diademata.** Red-fronted Barbet.

Pogonorhynchus diadematus Heugl. Ibis, 1861, p. 126, pl. v. fig. 3: Steppes of Kitsch-Negroes, Bahr-el-Abiad, i. e., Upper White Nile, *cf.* p. 124.

a. ♂ ad. Turkwel River, 2100 ft. Jan. 11.

Total length in flesh: 6½ inches. Wing: 82 mm.

This specimen is entirely unspotted below, except for a few on the lower flanks, thus agreeing with Heuglin's plate. It is in somewhat worn dress.

[Irides brown; bill black, bluish at base; legs and toes greyish brown.]

196. **Tricholæma diademata massaica.** Masailand Red-fronted Barbet.

Pogonorhynchus massaicus Reichw. Journ. für Orn. 1887, p. 59: Loeru, Masailand, German East Africa.

a. ♀ ad. Mt. Suswa. Sept. 26.

b. ♂ ad. Loita, 6300 ft. Oct. 4.

c, *d*. ♂ ♀ ad. Amala River, 5300 & 5500 ft. Oct. 14 & 21.

Total length in flesh: ♂ 6½ inches; ♀ 6 inches. Wing: ♂ 85 & 81 mm.; ♀ 80 & 78 mm.

These four specimens are all somewhat worn; they are all spotted on the underparts, but not so thickly as four specimens from Lake Naivasha in the British Museum collection.

[Irides brown; bill black, dark brown, or dark plumbeous; legs and toes black, blackish grey, or dark grey.]

Specimens in the British Museum collection from near the type locality of *T. d. diademata* have only a few spots on the lower flanks; these increase and spread to the abdomen and breast in specimens from further to the south, where they become *T. d. massaica*, which appears to be quite a good subspecies, though no decided geographical limit can be assigned to them.

Further to the southwards, in Nyasaland, a much more spotted form exists, having also a strong wash of bright yellow across the chest. This has been named *Tricholæma alexandri* by Shelley (Bull. B. O. C. vol. xiii. 1903, p. 61: Namwewe, Nyasaland); it would appear, however, to be a synonym of *Pogonorhynchus frontatus* Cab. (Journ. für Orn. 1880, p. 351, pl. ii. fig. 1: Angola), as the specimens before me agree perfectly with the plate, and on the back of the label of one of them I find in Prof. Neumann's handwriting, "compared with typical specimen from north Angola."

197. **Pogoniulus*** **pusillus affinis.** Reichenow's Little Barbet.

Barbatula affinis Reichw. Orn. Centr. 1879, p. 114: Kipini, mouth of Tana River, British East Africa.

a, b. ♂ ad. Amala River, 5500 ft. Oct. 13.

c. ♀ ad. 12 miles east of Amala River, 5700 ft. Oct. 26.

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* Mr. Tom Iredale informs me that Richmond (Proc. U.S. Nat. Mus. vol. xxxv. 1908, p. 634) has pointed out that *Pogoniulus* Lafresnaye (Dict. Univers. d'Hist. Nat. vol. ii. 1843, p. 463: type *Bucco parvus* Gmel.) should take the place of *Xylobucco* Bonaparte, as used by Oberholser (Proc. U.S. Nat. Mus. vol. xxviii. 1905, p. 867), in place of *Barbatula* Lesson also preoccupied.

d. ♂ ad. West of Mt. Leganisho, 5850 ft. Oct. 29.
e. ♂ ad. Narossura River, 5000 ft. Nov. 13.
f. ♀ ad. Southern Guaso Nyiro, 2900 ft. Nov. 22.
g. ♀ ? ad. Turkwel River, 1900 ft. Jan. 14.

Total length in flesh: ♂ 4¾–4⅛ inches; ♀ 4½–4⅛ inches. Wing: ♂ 57 mm.; ♀ 58–51 mm.

All these specimens are in good dress and show little signs of wear.

[Irides brown; bill black; legs and toes black, greenish black, or dark plumbeous. Quite common.]

The races and nomenclature of these Barbets appear to be as follows:—

Pogoniulus pusillus pusillus.

Bucco pusillus Dumont, Dict. Sc. Nat. vol. iv. 1806, p. 50: Sandag = Sunday River, Cape Colony; founded on Levaillant, Hist. Nat. Ois. Parad. et Barbus, vol. ii. 1806, p. 73, pl. 32; as are also *Bucco rubrifrons* Vieill. Nouv. Dict. d'Hist. Nat. vol. iv. 1816, p. 497, and *Bucco barbatula* Temm. Pl. Col. vol. iii. 1831, sp. 18 & 19.

Bucco nanus Vig. (Proc. Zool. Soc. 1831, p. 93: Algoa Bay) and *Bucco chrysoptera* Swains. (Anim. in Menag. 1838, p. 322: South Africa, ex Burchell) are also synonyms.

A large race. Wing 60 mm. and over. Streaks on back of head yellow; below pale olive-green; throat clearer green.

Range. Eastern Cape Colony, Natal, and Zululand.

Pogoniulus pusillus uropygialis.

Barbatula uropygialis Heugl. Journ. für Orn. 1862, p. 37: Ain Saba, Eritrea.

A smaller race. Wing under 60 and more than 55 mm. Streaks on back of head whitish; below similar to *P. p. pusillus*, but paler.

Range. Somaliland, Abyssinia, and Eritrea.

Shelley in the Catalogue of Birds in the British Museum, vol. xix. 1891, p. 41, says that this bird has "patch on rump fiery red," which is also quoted by Reichw. Vög. Afr. vol. ii. 1902, p. 152; whereas Heuglin in his original description gives it as follows : "uropygio late aurantiaco" = rump broadly orange.

Although I have not been enabled to examine specimens from Heuglin's type locality, Abyssinian and Somaliland birds agree with his description, and I have therefore placed them under his name.

POGONIULUS PUSILLUS AFFINIS.

Barbatula affinis Reichw. op. cit.

A smaller race. Wing 60 mm. Streaks on back of head whitish; below, throat as in *P. p. uropygialis*; breast and flanks isabelline, fading to pale olive-green in centre of abdomen and under tail-coverts.

Range. German East Africa, British East Africa, and Manda Island.

The name *Barbatula minuta* must go to the Senegal bird, and until specimens are available from that locality for comparison with north-eastern birds, it must stand for a bird which apparently up to the present is unknown.

The reason for this is that both Bonaparte's names of *B. minuta* in the Consp. Av. vol. i. 1850, p. 144; Sennaar, and in the Consp. Vol. Zyg. 1854, p. 12, are nomina nuda, and therefore for the first description of *B. minuta* we must go to Hartlaub, Orn. Westafr. 1857, p. 173: Senegal.

198. **Pogoniulus chrysoconus centralis.** Uganda Yellow-fronted Barbet.

Barbatula centralis Reichw. Orn. Monatsb. 1900, p. 40: Njangubo in Ndussuma, west of Lake Albert.

a. ♀ ad. Kamchuru, 3200 ft. Feb. 11.

Total length in flesh : $4\frac{5}{8}$ inches. Wing : 61 mm.

In good clean dress.

[Irides brown; bill black; legs and toes greyish black. Several seen.]

In naming this single specimen I have had to examine the whole series in the British Museum collection, and through the kindness of Mr. Rothschild and Dr. Hartert I have had the loan of five typical specimens from Senegal.

Eight forms are recognisable as follows :—

POGONIULUS CHRYSOCONUS CHRYSOCONUS.

Bucco chrysoconus Temm. Pl. Col. 1832, pl. 536: Galam, Senegal.

Of this, *Barbatula chrysocoma guineensis* Reichw. (Vög. Afr. vol. ii. 1902, p. 149: Togo) must become a synonym.

Forehead-patch pale orange-yellow; light streaks on mantle white, tinged with lemon-yellow; wing-coverts broadly edged with deep yellowish buff; rump lemon-yellow; throat lemon-yellow; breast and abdomen lemon-yellow strongly washed with chrome.

Wing-measurements give the following result: Senegal (five) 58–56; Portuguese Guinea (one) 55; Gold Coast (one) 56; Ubanghi River (two) 57 & 56 mm.

Range. Senegal to the Gold Coast and the River Ubanghi.

POGONIULUS CHRYSOCONUS EXTONI.

Barbatula extoni Layard, Ibis, 1871, p. 226: Kanye, Bechuanaland.

Forehead-patch deep orange, but not quite so deep as in *P. schoanus*; streaks on mantle white; rump more greenish yellow; below, throat pale whitish green, breast and abdomen greyish buff tinged with olive, looking very grey when compared to the northern races.

Wing-measurements are as follows: Bechuanaland (two) 64 & 63; Transvaal (nine) 67–61; Zambesi (one) 60; southern Angola (Caconda) (one) 62 mm.

Range. South Africa generally, north to the Zambesi and southern Angola.

POGONIULUS CHRYSOCONUS XANTHOSTICTUS.

Barbatula xanthosticta Blund. & Lovat, Bull. B. O. C. vol. x. 1899, p. 21: Chellia, Abyssinia.

Forehead-patch palish orange-yellow: light streaks on occiput narrower, showing more black; streaks on mantle deeper in colour than in *P. c. chrysoconus*, but paler than in *P. schoanus*; rump greenish yellow; below pale whitish green throughout.

Wing-measurement gives the following result: Chellia (two) 61 & 60 mm.

Range. Central Abyssinia.

Pogoniulus chrysoconus centralis.

Barbatula centralis Reichw. op. cit.

Forehead-patch more lemon-yellow; streaks on mantle broader and more lemon-yellow; rump more olive-yellow; wing-coverts more yellow, less buff; throat more greenish lemon-yellow; breast and abdomen lemon-yellow, faintly washed with chrome.

Wing-measurement gives the following result: Uganda (twelve) 61–57 mm.

Range. Uganda.

Pogoniulus chrysoconus zedlitzi.

Barbatula chrysocoma zedlitzi Neum. Bull. B. O. C. vol. xxiii. 1909, p. 30: Sennaar, Blue Nile.

Forehead-patch orange; mantle and wing-coverts very broadly edged yellowish buff, showing very little or no dark markings; below, throat and rest of underparts tinged with pale golden-yellow.

Wing-measurements are as follows: Nubia (one) 57 mm. This specimen bears the name of this race in Prof. Neumann's handwriting. In the original description in the Bull. B. O. C. the wing-measurement of the type is given as 27 mm.; this is obviously a misprint and should read 57 mm.

Range. Egyptian Sudan.

Pogoniulus chrysoconus schubotzi.

Barbatula chrysocoma schubotzi Reichw. Orn. Monatsb. 1912, p. 28: Fort Archambault, French Sudan.

Forehead-patch pale orange-yellow, streaks on mantle broader and whiter than in the typical form; below, uniform lemon-yellow (pale sulphur-yellow, Reichw.).

Wing-measurement gives the following result: Lake Chad and Shari River (three) 60–58 mm.

Range. French Sudan eastward to Lake Chad and Shari River. Apparently an inland form, running more or less parallel with the typical form.

Pogoniulus chrysoconus rhodesiæ.

Pogoniulus chrysoconus rhodesiæ C. Grant, Bull. B. O. C. vol. xxxv. 1915, p. 100: Chambezi valley, N.E. Rhodesia.

Forehead-patch similar in colour to *P. c. extoni*, but perhaps on the average rather larger; rest of upper parts similar; below, throat deeper whitish green, breast and abdomen as in *P. c. extoni*, but distinctly washed with yellow, much warmer and richer in tone on comparison, but not in any way approaching the underparts of *P. c. centralis*.

Type in the British Museum: ♂ ad. Chambezi Valley, north-eastern Rhodesia, 6. v. 08. S. A. Neave coll. Wing 61, culmen 13, tail 33, tarsus 14 mm.

Wing-measurements give the following result: Nyasaland (five) 63–60; N.E. Rhodesia and eastern Belgian Congo (five) 64–59; west of Lake Tanganyika (one) 60; northern Angola (Melange) (one) 63 mm.

Range. Northern British Nyasaland, west to North-east Rhodesia, eastern Belgian Congo, and northern Angola, north to west of Lake Tanganyika.

POGONIULUS SCHOANUS.

Barbatula schoana Neum. Journ. für Orn. 1904, p. 391: Dodgit, Province of Metscha, Abyssinia.

Forehead-patch orange-red; streaks of mantle and wings much more golden yellow; rump and underparts as in *P. c. centralis*.

Wing-measurement gives the following result: Dodgit (two) 61 & 59·5 mm.

Range. Central Abyssinia.

As the type localities of this race and *P. c. xanthostictus* almost coincide and the present evidence points to the probability of their occurring together, they cannot be placed as subspecies of each other. As *P. schoanus* differs in many ways more markedly from the typical forms than does *P. c. xanthostictus*, I have upheld it as a distinct species.

199. **Viridibucco simplex leucomystax.** Little Green Barbet.

Barbatula leucomystax Sharpe, Ibis, 1892, p. 310: Sotik, British East Africa.

a. ♀? ad. Hills south of Narossura, 7200 ft. Nov. 4.

Total length in flesh: 3¾ inches. Wing: 54 mm.

A rather badly shot specimen, which appears to have been in good clean dress.

[Irides brown; bill, legs and toes black.]

I have placed this bird as a subspecies of *Barbatula simplex* Fisch. & Reichw. (Journ. für Orn. 1884, p. 180: Massailand, German East Africa), as there is at present no evidence to show that they occur together.

I uphold this new genus proposed by Oberholser (Proc. U.S. Nat. Mus. vol. xxviii. 1905, p. 865), as I agree with him that these Barbets differ markedly from the typical *Pogoniulus.*

200. **Trachyphonus erythrocephalus erythrocephalus.** Red-and-Yellow Barbet.

Trachyphonus erythrocephalus Cab. Journ. für Orn. 1878, p. 206, pl. ii. figs. 1 & 2: Zanzibar, Mombasa, and further inland. Zanzibar is probably incorrect.

a, b. ♂ ♀ ad. Narossura, 5000 ft. Nov. 17.

c. ♀ imm. S. Guaso Nyiro, 2950 ft. Nov. 23.

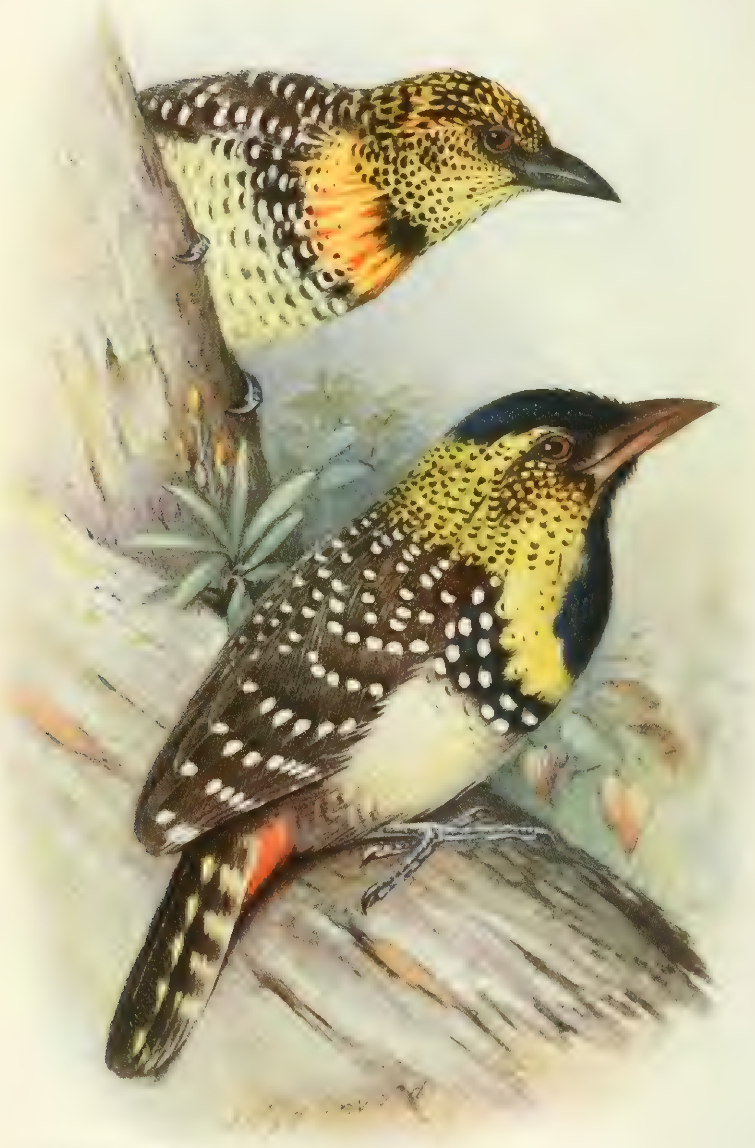
d. ♂ imm. Weiwei River, 3200 ft. Jan. 6.

Total length in flesh: ♂ ad. 9¼, imm. 9⅛ inches; ♀ 8¼, imm. 9⅛ inches. Wing: ♂ ad. 98, imm. 94 mm.; ♀ ad. 97, imm. 100 mm.

The two adults are in good dress and are but slightly worn; the immature male is in the dress of *Trachyphonus versicolor* Hartl. (Orn. Centr. 1882, p. 91: Central Africa, *ex* Emin Bey), having "red on the head much less extensive and the under tail-coverts yellow," which character, in my opinion, is that of the young bird, seeing that some specimens before me, of both sexes, have pure yellow under and upper tail-coverts whilst others have a slight admixture of red feathers, pointing to these ultimately assuming the dress of *T. e. erythrocephalus.*

The immature female is similar to the adult, but has more yellow than red on the upper and under tail-coverts.

[Irides brown; bill reddish horn; legs and toes plumbeous, bluish, or dirty plumbeous. Several seen frequenting dry stony hillsides, wherever there are scattered bushes.]



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TACHYPHONUS EMINI ♂ and ♀

Assuming that *Trachyphonus versicolor* is the young, and therefore synonymous with *T. e. erythrocephalus*, there will be but two races of this Barbet as follows:—

TRACHYPHONUS ERYTHROCEPHALUS ERYTHROCEPHALUS.

Trachyphonus erythrocephalus Cab. op. cit.

Size larger, wing in males 100–94, in females 100–94 mm.

Range. Northern German East Africa, British East Africa, and Uganda.

TRACHYPHONUS ERYTHROCEPHALUS SHELLEYI.

Trachyphonus shelleyi Hartl. Ibis, 1886, p. 105, pl. v.: Somaliland, *ex* Shelley, Ibis, 1885, p. 394.

Size smaller, wing in males 84–78, in females 81–76 mm.

Range. Somaliland.

201. **Trachyphonus emini.** Emin Pasha's Barbet. (Pl. V.)

Trachyphonus emini Reichw. Journ. für Orn. 1891, p. 209: Tabora, central German East Africa.

a. ♀ ad. Southern Guaso Nyiro, 6000 ft. Oct. 4.

b. ♀ ad. Loita, 6300 ft. Oct. 5.

Total length in flesh: 8 inches. Wing: 85 mm.

Both are in good clean dress.

[Irides brown or reddish brown; bill black; legs and toes bluish or dark plumbeous. The specimen from Loita was shot from a flock of six.]

The female of this species, which appears to be unknown, may be described as follows:—

Differs from the male in having the black feathers of the top of the head subterminally tipped with yellow; rest of upper parts as in male; below, chin white, upper throat yellow tipped with black, black patch confined to centre of lower throat, yellow feathers below patch edged with carmine; pectoral band perhaps not quite so broad, rest of underparts as in the male.

There are two males in the British Museum collection, one from north of Lake Nyasa and the other from Amja, German East Africa; these are alike and agree with Reichenow's description; they measure respectively in the wing 84 and 83 mm.

202. **Trachyphonus darnaudii darnaudii.** Darnaud's Barbet.

Micropogon darnaudii Des Murs, Lefebv. Abyss. 1850, p. 133: Kordofan.

a. ♂ ad. Baringo. Dec. 27.

b. ♂ ad. Kito, 60 miles N.W. of Baringo, 4100 ft. Jan. 2.

c. ♂ ad. Hills 10 miles N. of Maroto, 4000 ft. Jan. 23.

d. ♀ ad. Bakora Plains, 3500 ft. Feb. 4.

Total length in flesh: ♂ $7\frac{3}{4}$ & $7\frac{1}{2}$ inches; ♀ 7 inches. Wing: ♂ 77–74 mm.; ♀ 72 mm.

These four specimens agree well with others in the British Museum collection from Lado and the Bahr-el-Ghazal, which agree with Des Murs' description in the markings of the head, etc. They are showing signs of wear, especially the February specimen.

[Irides brown; bill dark or brownish horn, base of lower mandible lighter; legs and toes plumbeous, blue, or brownish flesh. Plentiful and common in dry bush country.]

Apparently three races of this Barbet are recognisable as follows:—

TRACHYPHONUS DARNAUDII DARNAUDII.

Micropogon darnaudii Des Murs, op. cit.

Above, feathers of top of head with subterminal reddish yellow bars; below, chest pale sulphur-yellow.

Range. Rift Valley, west and north to Uganda, Lado, Bahr-el-Ghazal, and Kordofan.

TRACHYPHONUS DARNAUDII BÖHMI.

Trachyphonus böhmi Fischer & Reichw. Journ. für Orn. 1884, p. 179: Pare-Gebirge, north-east German East Africa.

Of this, *Trachyphonus uropygialis* Salvad. (Mem. Accad. Torino, vol. xliv. 1894, p. 551: Somaliland, wing given as 70 mm.) becomes a synonym.

Above, feathers of top of head wholly blue-black; below, chest richer yellow, the feathers more or less edged with carmine.

Range. North-east German East Africa, British East Africa east of Rift Valley, Jubaland, south-east Abyssinia, and Somaliland.

TRACHYPHONUS DARNAUDII USAMBIRO.

Trachyphonus darnaudi usambiro Neum. Bull. B. O. C. vol. xxiii. 1908, p. 30: Usambiro, southern Victoria Nyanza, German East Africa.

The characters given of the markings appear to be those of typical *T. d. darnaudii,* but the size is certainly larger, 85–81 mm. in the wing as against 77–71 mm. in *T. d. darnaudii.* No specimens are available from that part of German East Africa for comparison.

Range. Probably confined to north-western German East Africa.

203. **Campethera nubica nubica.** Nubian Woodpecker.

Picus nubicus Bodd. Tabl. Pl. Enlum. 1783, p. 41: Nubia, founded on Pl. Enlum. no. 667.

a. ♂ ad. Mt. Suswa. Sept. 26.
b. ♂ ad. 30 miles N.W. of Baringo, 2800 ft. Dec. 31.
c. ♀ ad. Turkwel River, 1900 ft. Jan. 14.
d. ♂ ad. Kozibiri River, 1800 ft. Jan. 16.
e. ♀ ad. Mt. Maroto, 3700 ft. Jan. 26.
f. ♀ ad. Nakwai Hills, 3500 ft. Feb. 17.

Total length in flesh: ♂ 8½–8 inches; ♀ 9–8⅛ inches. Wing: ♂ 111–109 mm.; ♀ 112 mm.

All these specimens are in good dress; and all are banded on the mantle, except the male from Mt. Suswa, which has this part distinctly spotted. The male from near Baringo is almost white below as opposed to the strong buff coloration of the other five specimens.

[Irides red; bill, upper mandible black, blackish horn, or greyish horn, lower lighter; legs and toes dirty yellow, dirty green, greenish yellow, or greenish grey. Common.]

A careful examination of the series of over one hundred specimens in the British Museum collection shows that great individual variation exists in this Woodpecker, some being more spotted and others more barred on the upper parts, and some being more yellow and others more white on the underparts; so that great difficulty is found in selecting characters for geographical forms, which must necessarily be separated on general features only.

Dr. Sharpe also comments (Ibis, 1902, p. 637) on the variation of this bird, and remarks "that the barring of the flanks is more or less a sign of immaturity." With this I do not altogether agree; though it appears that the majority of young birds are more spotted on the mantle than barred.

Throughout its range this Woodpecker does not vary in size; but a pale form and a white-eyebrowed form can be recognised; thus allowing only three races as follows:—

CAMPETHERA NUBICA NUBICA.

Picus nubicus Bodd. op. cit.

Of this I consider the following must become synonyms:—

Picus nubicus Gmelin, Syst. Nat. vol. i. pt. 1, p. 439, 1788: Nubia, founded on Pl. Enlum. no. 667.

Dendromus æthiopicus Rüpp. Vög. N.O.-Afr. 1845, p. 90: Nubia, *cf.* p. 95.

Dendromus scriptoricauda Reichw. (Orn. Monatsb. 1896, p. 131: Lamu), the type of which is in the British Museum, agrees well with individual specimens of *C. n. nubica* in general characters; the throat is certainly very clearly spotted, though indications of this can be seen in one or two specimens of the Abyssinian and Somaliland forms; the dark tip to the tail is certainly very clear in this specimen, but indications of this are to be found in many specimens of the Abyssinian form and is therefore not perhaps of any subspecific value. In the spotted throat and dark tail-tip this bird agrees with the Nyasaland form, though it lacks the very distinct white eyebrow. It is not smaller than many Abyssinian females. I consider that it is merely an aberration of *C. n. nubica* and must for the present become synonymous with that race. Hargitt in 'Ibis,' 1883, p. 456, says that Kirk's specimen came from "Lamo, south of Zanzibar," and this has been quoted since that date; this is, however, quite wrong, as Lamu is north of Mombasa and was so given in the original record of this specimen by Shelley, Proc. Zool. Soc. 1881. p. 561, where he says "A collection from Lamo in 2° S. lat." With regard to *Dendromus neumanni* Reichw. (Orn. Monatsb. 1896, p. 132; Naivasha), the diagnostic characters given are: upper parts darker with very small and sparse white spots, underparts spotted up to chin, excepting that part lying between the rami of the lower mandibles. *Dendromus niger* Neum. (Orn. Monatsb. 1902, p. 9: Buka Bergen, southern Kaffa, Abyssinia) has diagnostic characters very similar to those of the last-named, and I consider them synonyms. These characters are found in some examples of this form throughout East Africa, Abyssinia, and Somaliland, and must therefore be due to individual variation; the pure black forepart of the head is undoubtedly due to immaturity.

Upper parts vary from spotted to barred, underparts usually yellow, sometimes more white; young in first dress usually have the forepart of the head black and without white specks, though this is not constant.

Range. Abyssinia, Sudan, Uganda, British East Africa, and northern German East Africa.

CAMPETHERA NUBICA PALLIDA.

Dendromus pallidus Sharpe, Ibis, 1902, p. 638: Lamu.

A much paler form; in the female the spots on the forepart of the head are bigger than in *C. n. nubica* and pure white.

Range. British Somaliland to the Tana River and Lamu, where it meets with the typical form.

CAMPETHERA NUBICA ALBIFACIES.

Dendromus albifacies Gunn. & Rob. Ann. Transv. Mus. vol. iii. 1911, p. 112: Villa Pereira, Boror, Port. East Africa.

Very similar to *C. n. nubica*, but differs from that race in having a well-developed superciliary stripe extending backwards to the nape. In the four specimens before me the throat is spotted, this character being given in the original description.

Range. Southern British Nyasaland and Boror district of Portuguese East Africa.

204. **Campethera cailliautii nyansæ.** Cailliaut's Woodpecker.

Dendromus malherbei nyansæ Neum. Journ. für Orn. 1900, p. 204: Muansa, south Victoria Nyanza. Wing given as 101 mm.

a, b. ♂ ♀ ad. Amala River, 5300 & 5500 ft. Oct. 15 & 22.

Total length in flesh: ♂ 7 inches; ♀ 7¼ inches. Wing: ♂ 101 mm.; ♀ 103 mm.

This pair is in good dress, the male showing signs of wear and having the spots on the mantle less distinct.

[Irides brown; bill black, lower mandible bluish horn; legs and toes green. Stomach of female contained small ants. Common.]

Three races of this Woodpecker are easily recognisable as follows:—

CAMPETHERA CAILLIAUTII CAILLIAUTII.

Chrysopicus cailliautii Malh. Rev. et Mag. Zool. 1849, p. 540: Africa (I designate Mombasa, British East Africa). Wing given as 99 mm.

Of this, *Chrysopicos malherbei* Cass. (Proc. Acad. Philad. vol. xv. 1863, p. 198: Zanzibar; *cf.* also Journ. Acad. Philad. 1863, p. 459, pl. li. fig. 3; wing given as 3¾ inches =95 mm.) must for the present become a synonym; *Picus imberbis* Sund. Consp. Av. Pic. 1866, p. 68, is a substitute name for *C. malherbei* Cass.

Size small, mantle darkish olive-green, spots paler olive-green, below washed with yellow.

Wing-measurements give the following result: Dar-es-Salaam, ♀ (one) 95; Mombasa, ♂ (one) 96, ♀ (one) 97; Mazeras, nr. Mombasa, ♂ (one) 99 mm.

Range. Island of Zanzibar and mainland adjacent (Dar-es-Salaam to Mombasa).

I have been unable to examine specimens from Zanzibar, but the three specimens from Dar-es-Salaam and Mombasa agree well with the description and plate of *C. malherbei*, and may therefore for the present be taken as typical.

The Mazeras specimen agrees in coloration very well with the Amala River birds; therefore a larger series may show that *C. c. cailliautii* and *C. c. nyansæ* will have to be united.

Reichenow in the Orn. Monatsb. 1896, p. 131, under the description of *Dendromus scriptoricauda* (type from Lamu in the British Museum), has drawn attention to *Chrysopicos cailliautii* Malh. (Rev. et Mag. Zool. 1849, p. 540 : Africa) being equal to *Chrysopicos malherbei* Cass.; but for some unknown reason he has not adopted this view in his Vög. Afrikas, vol. ii. 1902, p. 172.

Malherbe's excellent description undoubtedly refers to this bird and must be adopted for it; and as only Africa is designated as the type locality, I fix it on to the mainland coastal form and designate the particular type locality as Mombasa, thus leaving Cassin's name available for the Zanzibar bird, should it hereafter prove to be separable.

CAMPETHERA CAILLIAUTII NYANSÆ.

Dendromus malherbei nyansæ Neum. op. cit.

Size large; mantle more grass-green, spots white tinged with green; below similar to *C. c. cailliautii.*

Wing-measurements give the following result: Amala River, ♂ 101, ♀ 103; North-east Rhodesia, ♂ (one) 104 mm.

Range. Inland southern British East Africa to North-east Rhodesia.

CAMPETHERA CAILLIAUTII FÜLLEBORNI.

Dendromus malherbei fülleborni Neum. Journ. für Orn. 1900, p. 204: Langenburg, north-east of Lake Nyasa.

Similar in size to *C. c. cailliautii*, but upper surface grass-green, the spots large and almost white, below rather less yellow.

Wing-measurements give the following result: Nyasaland, ♂ (one) 94, ♀ (three) 95–93; south-eastern Rhodesia, ♂ (one) 97; Beira, ♂ (one) 94, ♀ (one) 95 mm.

Range. Nyasaland south to south-eastern Rhodesia and the Beira district of Portuguese East Africa.

The genus *Dendromus* Swains. Classif. Birds, vol. ii. 1837, p. 307, which has been used both by Neumann and Reichenow for this group of woodpeckers, is inadmissible, as it is preoccupied in mammals by *Dendromus* Smith, Zool. Journ. vol. iv. 1829, p. 438. Oberholser, Proc. U. S. Nat. Mus. vol. xxviii. 1905, p. 874, has already drawn attention to this.

205. **Dendropicos fuscescens massaicus.** Masailand Little Woodpecker.

Dendropicos guineensis massaicus Neum. Journ. für Orn. 1900, p. 206: Ndulalani, Lake Nguruman, north of Lake Victoria.

a, b. ♂ ad. Turkwel River, 1900 ft. Jan. 14.
c. ♀ ad. Kozibiri River, 2200 ft. Jan. 19.
d. ♀ ad. Bakora Country, 3600 ft. Feb. 3.

Total length in flesh: ♂ 5½ & 5¼ inches: ♀ 6 & 5¾ inches. Wing: ♂ 81 & 80 mm.; ♀ 85 & 84 mm.

Three are in rather worn dress and one female was nesting.

[Irides red or reddish brown; bill bluish or blackish horn; legs and toes in male greenish blue; in female dirty green. Plentiful.]

In naming these birds I have had to examine all the Woodpeckers belonging to this group.

To begin with, the names *Picus guineensis* Scop. (Del. Fl. F. Insubr. ii. 1786, p. 89) and *Picus cardinalis* Gmelin (Syst. Nat. vol. i. pt. i. 1788, p. 438), both founded on plate 35 in Sonnerat's Voy. Nouv. Guinée, 1776, p. 72, locality given as Island of Luzon, must be cast out of the nomenclature of the African Woodpeckers. The reasons for this are, that the plate agrees only superficially with the small Cape Woodpecker, to which these names have always been attached, and the descriptions given by all three authors does not tally in any single detail, *i. e.*, the size is given as equal to that of the European Green Woodpecker, the feathers of the mantle are stated to be *black, bordered* with white, and the wing-feathers and tail as *black.* Scopoli, moreover, says that the tail is not acuminate, but this statement was undoubtedly founded on the plate, which certainly shows the tail rounded; though this is not borne out in Sonnerat's description. I suggest that Sonnerat's bird originally came from America and was accidentally mixed up with his New Guinea collection, as both the size and markings agree more with *Colaptes* or *Chrysoptilus*; Sonnerat's bird appears, however, at the moment to be indeterminate.

The elimination of these two names, which should never have found their way into the African list at all, really simplifies the situation, and fixes the Cape bird on to Levaillant's excellent plate.

Prof. Neumann in the Journ. für Orn. 1900, p. 206, has created a race under the name *Dendropicus guineensis cardinalis,* which is of course absurd.

This group is admittedly difficult, inasmuch as the forms resemble each other very closely, and a certain amount of individual variation occurs; so that only comprehensive general characters can be taken as diagnostic features, either of colour, pattern, or size. Hitherto several of the names have been hopelessly misused, as, for instance, *hartlaubii, zanzibari,* and *lafresnayi,* especially the first, which has been recorded far to the south of the Zambesi, where it certainly does not exist.

The very large series in the British Museum collection shows that the following species and subspecies are recognisable:—

I. Barring of mantle and wings on the surface, clear and well defined. Appearance of upper surface more black and white.

DENDROPICOS FUSCESCENS FUSCESCENS.

Picus fuscescens Vieill. Nouv. Dict. d'Hist. Nat. vol. xxvi. 1818, p. 86: *ex* Levaillant, forests of the Cape, *cf.* Ois. d'Afr. vol. vi. 1808, p. 25, pl. 253. figs. 1 & 2.

Of this, *Picus fulviscapus* Licht. (Verz. Doubl. 1823, p. 11: Terra Caffrorum), *Colaptes capensis* Steph. (Gen. Zool. vol. xiv.

1826, p. 171, *ex* Levaillant), *Picus chrysopterus* Less. (Traité d'Orn. 1831, p. 220: Cap). *Picus flaviscapus* Monteiro (Proc. Zool. Soc. 1865, p. 96: Mossamedes, nom. nud. and apparently a misprint for *fulviscapus*), are synonyms.

Size large; back and wings blackish, distinctly barred with green or greenish white; lesser wing-coverts in male greenish, in female blackish. Upper tail-coverts golden green, more or less tinged with red.

Wing-measurements give the following result:—Cape, ♂ (one) 99: Griqualand East, ♂ (five) 96–93, ♀ (two) 96 & 92; Natal and Zululand, ♂ (eight) 96–90, ♀ (ten) 96–89; Orange River Colony, ♂ (four) 99–94; Transvaal and Swaziland, ♂ (six) 99–95, ♀ (three) 97–93; Inhambane and Beira, Portuguese East Africa, ♂ (five), 92–90, ♀ (three) 95–88; Bechuanaland, ♂ (five) 98–92, ♀ (four) 96–93; Mashonaland, ♂ (three) 95–94, ♀ (two) 95 & 93; south-eastern Rhodesia, ♂ (seven) 99–92, ♀ (two) 92 & 90; Zambesi, ♂ (seven) 97–90, ♀ (five) 95–89; Damaraland, ♂ (six) 95–88, ♀ (six) 95–89; southern Angola, ♂ (two) 95; Nyasaland and Angoniland, ♂ (ten) 94–87, ♀ (seven) 95–87; North-east Rhodesia, ♂ (one) 94, ♀ (three) 98–91; eastern Belgian Congo, ♂ (one) 94 mm.

Taking into consideration the individual variation that occurs, even in a series from one locality, both in the coloration and the measurement, it must be admitted that only one form should be recognised in South Africa.

Range. Cape Colony and Natal northwards to Damaraland and southern Angola (Caconda and Benguella) on the west, and Nyasaland, North-east Rhodesia, and eastern Belgian Congo on the east.

DENDROPICOS FUSCESCENS HEMPRICHII.

Picus hemprichii Hemp. & Ehr. Symb. Phys. 1828, fol. *r.* 2: Akiko, Abyssinia.

Size smaller and general appearance much lighter than *D. f. fuscescens*, back and wings more sooty, distinctly barred with white, lesser wing-coverts in male blackish as in the female, upper tail-coverts red.

Wing-measurements give the following result:—Abyssinia, ♂ (seven) 85–78, ♀ (nine) 82–78; British Somaliland, ♂ (eleven) 85–78, ♀ (eight) 83–79 mm.

Range. Abyssinia, Somaliland, and probably Jubaland.

Erlanger in the Journ. für Orn. 1902, p. 258, has described a race from Djuba River, Jubaland, under the name *Dendropicus hemprichi albicans,* and gives as characters: size smaller and upperside much whiter, white bands much broader, wing 80–76 mm. A male from the Tana River, in the British Museum collection, agrees perfectly with a large series of *D. f. massaicus,* and has a wing of 76 mm.; therefore it would appear that the characters, especially of the wing-measurement, do not substantiate this race.

One adult female collected by E. Lort Phillips in Somaliland (Brit. Mus. Reg. No. 89.3.20.1) has the upper tail-coverts clear mouse-grey, without a trace of red. As it otherwise agrees with normal females of *D. f. hemprichii,* I should put this down to merely individual aberration.

DENDROPICOS FUSCESCENS MASSAICUS.

Dendropicos guineensis massaicus Neum. op. cit.

Wing given as 85–82 mm.

Of this I consider *Dendropicos guineensis centralis* Neum. (op. cit. p. 206: Iringa, German East Africa, wing given as 93–90 mm.) is a synonym.

General appearance very similar to *D. f. fuscescens,* but size always smaller.

Wing-measurements give the following result:—British East Africa, ♂ (ten) 87–81, ♀ (eight) 85–76; Manda Island, ♂ (two) 86 & 82; German East Africa, Ugogo, ♀ 89, Rovuma River, ♀ 85 mm.

Range. German East Africa, British East Africa, and Manda Island.

DENDROPICOS FUSCESCENS COSENSI.

Dendropicos fuscescens cosensi C. Grant, Bull. B. O. C. vol. xxxv. 1915, p. 101: Senegal.

Size similar to *D. f. massaicus* or *D. f. hemprichii,* but differing from both in the general isabelline coloration of the dark markings, both above and below; white barring of mantle and wings tinged with isabelline, upper tail-coverts golden isabelline, the apical half red.

Type in British Museum: ♂ ad., Senegal. R. B. Sharpe coll. Wing 81, culmen 19, tail 36, tarsus 15 mm.

Named in honour of Capt. G. P. Cosens.

This specimen, though a single one, differs so markedly in general appearance from *D. f. fuscescens* and its two races, and comes from so remote a locality, that I have been compelled to recognise it as a distinct subspecies.

Range. Senegal.

II. Barring of mantle and wings either absent or submerged, not clear and well defined. Appearance of upper surface more green and olive, not black and white.

DENDROPICOS ABYSSINICUS ABYSSINICUS.

Picus abyssinicus Stanley, Salt's Voy. Abyss. 1814, p. lvi: Abyssinia.

Through the kindness of Dr. Clubb of the Liverpool Museum I have been enabled to examine Stanley's type, which is a male and has a wing of 95 mm. It agrees exactly with the five specimens in the British Museum collection.

Size large, mantle without any appearance of barring, rump and upper tail-coverts red.

The wing-measurement gives the following result: ♂ (five) 98–93 mm.

Range. Abyssinia.

DENDROPICOS ABYSSINICUS HARTLAUBII.

Dendropicos hartlaubii Malh. Rev. et Mag. Zool. 1849, p. 532: Zanzibar. Wing given as 91 and 87 mm.

Of this *Dendropicos zanzibari* Malh. (Pic. vol. i. 1861, p. 201: Zanzibar) becomes a synonym.

Size large; above clear green, light bars of mantle and wings narrow and submerged, rump green; below strongly tinged with yellow, streaks rather narrow.

Wing-measurements are as follows:—Zanzibar, ♂ (two)

91 & 88, ♀ (one) 86 ; Pangani River, ♂ (two) 90 & 87 ; Dar-es-Salaam, ♂ (one) 90 ; Rovuma River, ♂ (one) 90 ; Sena, ♂ (one) 93 mm.

Range. Island of Zanzibar and mainland immediately adjacent (Pangani River and Dar-es-Salaam), ranging south to the Rovuma and Zambesi Rivers (Sena).

This race cannot be confounded with *D. f. fuscescens*, and the records of it occurring in South Africa, except on the lower Zambesi River, are quite erroneous, and have undoubtedly arisen through not comparing specimens from the actual type locality.

DENDROPICOS LAFRESNAYI LAFRESNAYI.

Dendropicos lafresnayi Malh. Rev. et Mag. Zool. 1849, p. 533 : Africa=Gaboon, *cf.* Rev. et Mag. Zool. 1855, p. 872. Wing given as 85 mm.

Of this, *Dendropicos sharpii* Oust. (N. Arch. Mus. (2) vol. ii. 1879, p. 62 : Doumé, Ogôoué, wing given as 85 mm.) ; *Dendropicus tropicalis* Reichw. (Journ. für Orn. 1887, p. 302 : Leopoldville, wing given as 79 mm.) ; and *Dendropicus camerunensis* Sharpe (Ibis, 1907, p. 443: River Ja, Cameroon), must for the present become synonyms.

Size small ; above olive-green, either with the barring on the mantle absent or only very indistinct and submerged, rump without or only slightly tinged with red ; below strongly tinged with yellow, with the streaks clear and dark ; black wing-bars below broader.

Wing-measurements are as follows :—Cameroon, ♂ (one) 82 (the ♂ type of *D. camerunensis* is in moult, and therefore cannot be measured), ♀ (three) 80–75 ; nr. Congo mouth, ♂ (five) 84–79, ♀ (five) 83–75 ; River Ubanghi, ♀ (one) 81 mm.

Range. Congo mouth to Cameroon, eastward to the Ubanghi River.

The five specimens before me from the River Ja and Efulen in Cameroon, including the type of *D. camerunensis*, are certainly darker than the Congo birds, and should perhaps be kept separate ; but until a series is available actually from the Gaboon River, it is quite impossible to say whether the Cameroon or the Congo bird will prove to be the true *D. lafresnayi*, and I therefore prefer to unite them under the oldest name pending the settlement of this question.

DENDROPICOS LAFRESNAYI LEPIDUS.

Ipoctonus lepidus Cab. & Heine, Mus. Hein. vol. iv. pt. 2, 1863, p. 118: Abyssinia. Wing given as 3″ 1‴ = 70 mm.

Of this, *Dendropicos simoni* O.-Grant (Bull. B. O. C. vol. x. 1900, p. 38: Konduro, Abyssinia; wing given as 3″ 2‴ = 80 mm.) becomes a synonym.

Size small; above darker olive-green than *D. l. lafresnayi*, either with the barring on the mantle absent or distinctly submerged, rump slightly tinged with red; below darker yellow than in *D. l. lafresnayi*, streaks broader, giving the underside a rather more dirty appearance.

Wing-measurements give the following result:—Abyssinia, ♂ (one, type of *D. simoni*) 80: Sudan, ♂ (one) 86, ♀ (one) 84; Uganda, ♂ (eleven) 87–81, ♀ (six) 86–81; British East Africa, ♂ (three) 92–87, ♀ (seven) 88–82; East Belgian Congo, ♂ (one) 83, ♀ (one) 85; German East Africa (Pangani River), ♂ (one) 85, ♀ (one) 84 mm.

Range. Abyssinia to German East Africa, westward to the Egyptian Sudan and eastern Belgian Congo.

This race can always be separated from *D. f. massaicus* by having the appearance of the upperside green, the bars being submerged and the lesser wing-coverts being green in both sexes.

DENDROPICOS LAFRESNAYI ZECHI.

Dendropicos guineensis zechi Neum. Journ. für Orn. 1904, p. 400: Kete-Kretschi, Togoland.

Size small; differs from *D. l. lafresnayi* in having the green of the mantle clearer and the bars even more submerged and less distinct; rump but slightly tinged with red; below paler yellow, with the streaks much narrower and not so distinct.

The wing-measurements give the following result:—

Nigeria, ♀ (two) 84 & 79; Gold Coast, ♂ (four) 88–82; Sierra Leone, ♂ (two) 81 & 80; Gambia, ♀ (one) 81; Portuguese Guinea, ♂ (one) 79, ♀ (one) 81 mm.

Range. Nigeria to Gambia.

DENDROPICOS LAFRESNAYI LOANDÆ.

Dendropicos lafresnayi loandæ C. Grant, Bull. B. O. C. vol. xxxv. 1915, p. 101: Loanda, Angola.

Differs from *D. l. lafresnayi* by having the green of the back very similar to *D. a. hartlaubii*; the mantle always barred, the barring being rather less submerged than in either *D. l. lafresnayi* or *D. a. hartlaubii*; rump tinged with red; below, streaks narrower and the abdomen clearer (less streaked).

Type in the British Museum: ♂ ad. Loanda, Angola, May 1869. J. J. Monteiro coll. Wing 85, culmen 19, tail 43, tarsus 14 mm.

The wing-measurements give the following result:—Loanda and north Angola, ♂ (six) 89–85, ♀ (six) 89–87 mm.

A female from Malange has a wing of 93 mm., and though having the underparts of this race, in size and the markings of the upper parts agrees more with *D. f. fuscescens*; and it would therefore appear that the two forms grade into each other in that district, and that there is a link between the *D. fuscescens* group and *D. lafresnayi* group, as pointed out further on.

Range. Loanda district, Angola.

This race differs from *D. f. fuscescens* in being greener above, having the barring of the mantle more submerged and the streaks on the breast much less broad. It might almost, with equal truth, be placed as a subspecies of that group, but its semi-submerged barring and greener appearance brings it nearer to the *D. lafresnayi* group.

The division of these *streak-breasted* Woodpeckers under two headings and into three groups appears to simplify the nomenclature and races, causing them to work out in a geographically correct manner.

Dendropicus pœcilolæmus Reichw. (Orn. Monatsb. 1893, p. 30: Sconga, west of Lake Albert; wing given as 86 mm.), which Reichenow compared with *D. l. lafresnayi*, has nothing to do with this *streak*-breasted group, and should be placed under the *spotted*-breasted *Picus minutus* (Temm. Pl. Col. 1823, pl. 197: Senegal).

206. **Dendropicos lafresnayi lepidus.** Abyssinian Little Woodpecker.

Ipoctonus lepidus Cab. & Heine, Mus. Hein. vol. iv. pt. 2, 1863, p. 118: Abyssinia.

a. ♂ ad. Top of Mau Escarpment, 7200 ft. Sept. 29.

b. ♀ ad. Southern Guaso Nyiro, 6000 ft. Oct. 4.

c. ♂ ad. Amala River, 5500 ft. Oct. 15.

Total length in flesh: ♂ 6 inches; ♀ 6 inches. Wing: ♂ 93 mm.; ♀ 90 mm.

These three specimens are in good dress and but slightly worn.

[♂. Irides red; bill, upper mandible black, lower bluish horn; legs and toes dirty green. ♀. Irides brown; bill bluish black; legs and toes dirty green.]

207. **Thripias namaquus schoënsis.** Abyssinian Bearded Woodpecker.

Picus (Dendrobaptes) schoënsis Rüpp. Mus. Senck. vol. iii. 1842, p. 120: Schoa, Abyssinia.

a. ♂ imm. Amala River, 5500 ft. Oct. 14.

b. ♀ ad. Kito, 60 miles N.W. of Baringo, 4100 ft. Jan. 2.

c. ♀ ad. Annamuget, 3700 ft. Feb. 1.

Total length in flesh: ♂ 8¾ inches; ♀ 9¼ & 8¾ inches. Wing: ♂ 126 mm.; ♀ 131 & 128 mm.

The two females are showing signs of wear, and the male is in new first dress, has the red confined to the back half of the head, the forehead being black, tipped with white, and the bill is short, being only 31 mm. long.

[♂. Irides dark brown; bill, upper mandible dark horn, lower bluish horn; legs and toes plumbeous. ♀. Irides red; bill dark bluish horn; legs and toes dirty green.]

Four, and probably five, races of this Woodpecker are recognisable, as follows:—

THRIPIAS NAMAQUUS NAMAQUUS.

Picus namaquus Licht. Cat. Rer. Nat. Hamb. 1793, p. 17: Interior of South Africa.

The following three names have been founded on Levaillant (Ois. d'Afr. vol. vi. 1808, p. 22, pls. 251 & 252) and are synonyms: *Picus mystaceus* Vieill. Nouv. Dict. d'Hist. Nat. vol. xxvi. 1818, p. 73; *Picus biarmicus* Val. Dict. Sc. Nat. vol. xl. 1826, p. 176: Cafferland; and *Picus diophrys* Steph. Gen. Zool. vol. xiv. 1826, p. 161; South Africa.

Above, mantle washed with green; below, chest olive-green, barred with whitish; wing-quills stained golden, auricular patch not extending beyond ear-coverts.

Range. South Africa generally, northwards to Nyasaland, and Angola (Rio Chimba and Huilla).

THRIPIAS NAMAQUUS SCHOËNSIS.

Picus (Dendrobaptes) schoënsis Rüpp. op. cit.

Above and below darker, chest brownish black, washed with dark olive; wing-quills not so strongly stained with golden, auricular patch extending beyond ear-coverts and more or less joined to throat-stripe.

Range. British East Africa to Abyssinia and Somaliland.

An adult female in the British Museum collection from Mulema, Uganda, and two males from Ugogo, German East Africa, agree with *T. n. namaquus* in the colour of the chest, but have the auricular patch as in *T. n. schoensis*; to this intermediate race I propose to give the following name:—

THRIPIAS NAMAQUUS INTERMEDIUS.

Thripias namaquus intermedius C. Grant, Bull. B. O. C. xxxv. 1915, p. 101: Ugogo, German East Africa.

Characters as stated above.

Type in British Museum: ♂ ad. Ugogo, German East Africa. Kirk coll. Wing 137, culmen 35, tail 69, tarsus 22 mm.

Range. Northern German East Africa and southern Uganda.

THRIPIAS NAMAQUUS DECIPIENS.

Mesopicus decipiens Sharpe, Journ. Linn. Soc., Zool. vol. xvii. 1884, p. 430: Zanzibar.

The only specimen available is the type, and this is a young male. It however differs from young males of *T. n. namaquus* and *T. n. schoensis* in having the mantle and rump grey, without any green: the chest is darker than in *T. n. namaquus*, but much paler than in *T. n. schoensis*; the wing-quills entirely lack any golden stain; the auricular streak is as in *T. n. namaquus*. Until further material comes to hand to disprove these characters, I consider that this race should be upheld.

Range. Island of Zanzibar.

Two specimens in the British Museum collection, a male and a female respectively from Ugogo and Tete, bear in Hargitt's handwriting "Type of *Mesopicus decipiens* Sharpe." This is not correct, as Sharpe gives his locality as Zanzibar, and states that the type-specimen is in the Hargitt collection, which is now in the British Museum.

The characters given by Reichenow for his var. *angolensis* (Vög. Afr. vol. ii. 1902, p. 190: Malandje, Kuanza River, northern Angola) appear to point to a distinct race, especially the dark brown tail; but I have no specimens from northern Angola to compare with those from the southern part of the colony.

208. **Yungipicus obsoletus ingens.** Little Plain-backed Woodpecker.

Iyngipicus obsoletus ingens Hart. Nov. Zool. 1900, p. 33: Nairobi, British East Africa.

a. ♀? juv. Kamchuru, 3300 ft. Feb. 12.

Total length in flesh (tail not fully grown): $4\frac{3}{4}$ inches. Wing (not fully grown): 71 mm.

This single specimen, though marked as "♀? juv.," is a male, as is shown by the red on the occiput. It is quite young, and has not apparently long left the nest, as the wings and tail are barely three-quarters grown. It appears to differ from the full adult only in having the primary quills tipped with whitish.

[Irides brown ; bill blackish horn, base of lower mandible whitish ; legs and toes plumbeous.]

The small number of examples of this Woodpecker in the British Museum collection from British East Africa and Uganda does not allow me to speak with confidence as to the geographical value and range of this subspecies; but I append the wing-measurements of the series before me, both of this race and the true *Picus obsoletus* Wagl. (Isis, 1829, p. 510: Senegambia, wing given as 2¾ (German inches)=74 mm.), viz. :—Gambia, ♂ (two) 81–80, ♀ 82: Portuguese Guinea to Welle River, ♂ (ten) 82–78, ♀ (ten) 82–75 ; Sudan, ♂ (three) 81–77, ♀ (three) 82–77 ; Uganda, ♀ 81 ; British East Africa, Fort Hall, ♂ 86, Nairobi, ♂ 91 mm.

It will thus be seen that the only specimen that actually reaches the wing-measurement given by Hartert (90 mm.) is the one from Nairobi, and I therefore may be wrong in placing the Kamchuru young bird under this race, though the mantle is distinctly darker than west coast birds, and agrees in this respect with the Nairobi specimen.

Two other forms have been described—*Jyngipicus obsoletus nigricans* Neum. (Journ. für Orn. 1904, p. 402 : Uma Fluss, Abyssinia, wing given as 82) and *Jyngipicus obsoletus heuglini* Neum. (op. cit. : Eritrea, wing given as 89–85 mm.) ; but the status of the four supposed races cannot be decided with the material before me.

209. **Mesopicus goertæ centralis.** East African Grey Woodpecker.

Mesopicus goertæ centralis Reichw. Orn. Monatsb. 1900, p. 59 : Ndussuma, west of Lake Albert.

a. ♀ ad. 70 miles N.W. of Baringo, 3400 ft. Jan. 3.

b. ♀ ad. Turkwel River, 2100 ft. Jan. 11.

Total length in flesh : 8 & 7¾ inches. Wing : 106 mm.

Both these specimens are rather worn, and the one from the Turkwel River is much darker on the mantle than the other and has a distinct red and yellow streak on the belly, as opposed to the plain belly of the other specimen.

[Irides brown; bill black, base of lower mandible bluish; legs and toes grey or dirty plumbeous.]

An examination of the large series in the British Museum shows that a certain amount of individual variation occurs among birds from the same locality, so that only general features can be taken as diagnostic characters; this allows of only two forms being recognised, a western and an eastern, as follows:—

MESOPICUS GOERTÆ GOERTÆ.

Picus goertæ S. Müll. Linn. Syst. Nat. Suppl. 1776, p. 91: Senegal; founded on pl. 320, Pl. enlum. & Buffon, Hist. Nat. vol. vii. 1780, p. 25.

Of this, the following must become a synonym: *Dendrobates poicephalus* Swains. Birds W. Afr. vol. ii. 1837, p. 154: Western Africa=Gambia, wing given as $4\frac{3}{10}''$= 109 mm. The description agrees perfectly with *M. g. goertæ*. In the 'Ibis,' 1902, pp. 425 & 641, Mr. Ogilvie-Grant and Dr. Sharpe remark that the differences given by Reichenow for the subspecies do not hold good. With this I agree in some of the cases, but all of these authors have overlooked the fact that *M. goertæ* and *D. poicephalus* are synonymous.

Below paler, washed with yellowish or olive.

Range. Senegal to the Congo mouth, eastward to the Ubanghi and Welle Rivers.

MESOPICUS GOERTÆ CENTRALIS.

Mesopicus goertæ centralis Reichw. op. cit.

Of this I consider the following must become a synonym: *Mesopicus goertæ königi* Neum. (Orn. Monatsb. 1903, p. 181: Mutmir, River Nile below Khartum); the characters given being apparently only individual; any way, specimens before me from the tributaries of the Nile do not differ from the rest of the series.

Below darker, washed with ashy.

Range. Uganda to the Sudan and River Nile, westwards to Niam Niam and the Bahr el Ghazal.

Mesopicus goertæ abessinicus Reichw. (Orn. Monatsb.

1900, p. 58: Abyssinia), judging by the description, has nothing to do with *M. g. goertæ* and its ally, but is obviously applicable to *M. s. spodocephalus* and its ally. Reichenow says that *M. spodocephalus* and *M. rhodeogaster* are synonymous, but with this I do not agree, and consider, despite the fact that he has examined the type of *M. spodocephalus*, that the, presumably, western Abyssinian bird will not prove separable from the central Abyssinian typical form, seeing that slight individual variation has to be taken into account.

As for *Dendrobates immaculatus* Swains. (Birds West Africa, vol. ii. 1837, p. 152: type locality unknown), which has been placed by Hargitt (Cat. Birds Brit. Mus. vol. xviii. 1890, p. 368) as a synonym of *M. goertæ*, and by Reichenow (Vög. Afr. vol. ii. 1902, p. 184) as a doubtful synonym of *M. griseocephalus* (*Picus griseocephalus* Bodd. Tabl. Pl. Enl. 1783, no. 49, *ex* Buffon: Cap de Bonne Espérance), the description fits in every detail the latter species, and should in future without question be placed as a synonym of it.

210. Mesopicus spodocephalus rhodeogaster. Eastern Green-backed Woodpecker.

Picus (*Mesopicus*) *rhodeogaster* Fischer & Reichw. Journ. für Orn. 1884, p. 180: Massailand, northern German East Africa. Wing given as 105 mm.

a. ♂ ad. Loita, 6300 ft. Nov. 28.

Total length in flesh: 8 inches. Wing: 106 mm.

This specimen is in good dress, but rather faded, especially on the flight-feathers.

[Irides brown; bill, upper mandible black, lower greyish horn; legs and toes dark plumbeous. Rare in Loita plains, but tolerably common elsewhere.—W. P. L. This field-note probably also refers to *M. g. centralis*.—C. H. B. G.]

Two races of this Woodpecker are recognisable, as follows:—

MESOPICUS SPODOCEPHALUS SPODOCEPHALUS.

Dendrobates spodocephalus spodocephalus Bonap. Consp. Av. vol. i. 1850, p. 125: Afr. occ. = Afr. or. This name was founded on plate 34 in Rüppell, Vög. Nord-Ost-Afr. 1845,

p. 86, the locality for which is given as Shoa, *cf.* p. 95; therefore that locality must stand for the type, and there is no doubt that Afr. occ. of Bonaparte is a printer's error for Africa orientalis.

Chest and flanks washed with olive-green.

Range. Abyssinia.

MESOPICUS SPODOCEPHALUS RHODEOGASTER.

Picus (Mesopicus) rhodeogaster Fischer & Reichw. op. cit.

Chest and flanks distinctly greyer.

Range. British East Africa and northern German East Africa.

In the original description the authors say that the "red belly-streak extends to the breast"; this character is, however, equally noticeable in Abyssinian birds; also that "the grey of the head and underside is somewhat darker." The underside is certainly greyer than Abyssinian birds, but whether this would be considered darker as compared to the olive-green wash of the other bird, is an arguable point; the mantle is not appreciably "intensiver goldgelb," and the mixed red on the mantle is an individual character.

This race, though but slightly differentiated from the typical form, can stand because of the somewhat greyer underparts.

211. **Jynx torquilla torquilla.** European Wryneck.

Jynx torquilla Linn. Syst. Nat. 10th ed. 1758, p. 112: Sweden. See also pl. i. fig. 78 of the Faun. Svec.

a. ♀ ad. Falabek, 2600 ft. Feb. 24.

Total length in flesh: 7½ inches. Wing: 86 mm.

This specimen is moulting into new dress.

[Irides brown; bill greyish horn; legs and toes greyish flesh. Scarce.]

Dr. Hartert, in his Vög. paläarkt. Fauna, vol. ii. 1912, pp. 937–941, has discussed the following forms of the Common Wryneck:—*Jynx torquilla tschusii* Kleins. Falco, 1907, part 6, p. 103: Sardinia (Kleinschmidt has given no measurements, nor has he designated a type in his original description, he gives the wing as 85–82 mm.); *Jynx* *torquilla mauretanica* Roths. Bull. B. O. C. vol. xxiii. 1909, p. 103: Algeria, wing given as 82·5–76 mm.; and *Jynx torquilla japonica* Bonap. Consp. Av. vol. i. 1850, p. 112: Japan; all these appear to be well substantiated. Since Hartert's work was published, another form has been described—*Jynx torquilla sarudnyi* Loud. Orn. Monatsb. 1912, p. 44: Transcaspia, wing given as 85 mm. I have not gone into these races very thoroughly, but I am satisfied that the specimen enumerated above belongs to the typical form.

212. **Jynx ruficollis cosensi.** Capt. Cosen's Red-breasted Wryneck.

Jynx ruficollis cosensi C. Grant, Bull. B. O. C. xxxv. 1915, p. 102: Amala River, British East Africa.

Similar in coloration to the typical form, but always larger, wing 101–94 mm. as against 95–90 mm. in *J. r. ruficollis*; differs from *J. r. pulchricollis* in having the throat red-brown, uniform with the neck.

Type in the British Museum: ♂ ad. Amala River, British East Africa, 18. x. 12. G. P. Cosens coll. Wing 97, culmen 19, tail 73, tarsus 21 mm.

Named in honour of Capt. G. P. Cosens.

a. ♂ ad. Amala River, 5400 ft. Oct. 18 (the type).

Total length in flesh: 8⅛ inches. Wing: 97 mm.

[Irides reddish brown; bill brownish horn; legs and toes brownish flesh. This, the only specimen seen, was shot in some tall trees.]

The resident African Wrynecks do not appear to overlap in their geographical range, and can therefore be arranged subspecifically as follows:—

JYNX RUFICOLLIS RUFICOLLIS.

Jynx ruficollis Wagl. Nat. Syst. Amph. 1830, p. 118: Kaffirland.

As shown by Richmond, Auk, vol. xvii. 1900, p. 179, and subsequently drawn attention to by Hellmayr, Journ. für Orn. 1904, p. 307, Wagler's name preoccupies *Yunx pectoralis* Vigors, Proc. Zool. Soc. 1831, p. 93: Algoa Bay.

Of this, *Yunx indica* Gould (Proc. Zool. Soc. 1849, p. 112:

type locality incorrectly given as Afghanistan, seeing that the description fits the South African bird exactly) also becomes a synonym.

Size smaller, wing 95–90 mm.

Range. South Africa generally as far north as the north-eastern Transvaal and west to the Congo mouth, which probably constitutes its most northern range.

The dated specimens in the British Museum collection give the following months: April, May, June, August, November, and December, which does not altogether point to this race only wintering in South Africa (*cf.* Ibis, 1911, p. 727, where my notes refer to one district only, viz. the north-eastern Transvaal).

JYNX RUFICOLLIS ÆQUATORIALIS.

Iynx æquatorialis Rüpp. Mus. Senck. vol. iii. 1842, p. 121: southern province of Abyssinia.

Size smaller; red-brown extends down the flanks and joins up with the under tail-coverts. Wing 94–90 mm.

Range. Abyssinia.

JYNX RUFICOLLIS PULCHRICOLLIS.

Iynx pulchricollis Hartl. Ibis, 1884, p. 28, pl. iii.: Barbira: Upper White Nile.

Size smaller; throat barred and not red-brown. Wing given as 94 mm. This race is not represented in the British Museum collection.

Range. Upper Nile and Bahr-el-Ghazal.

JYNX RUFICOLLIS THORBECKI.

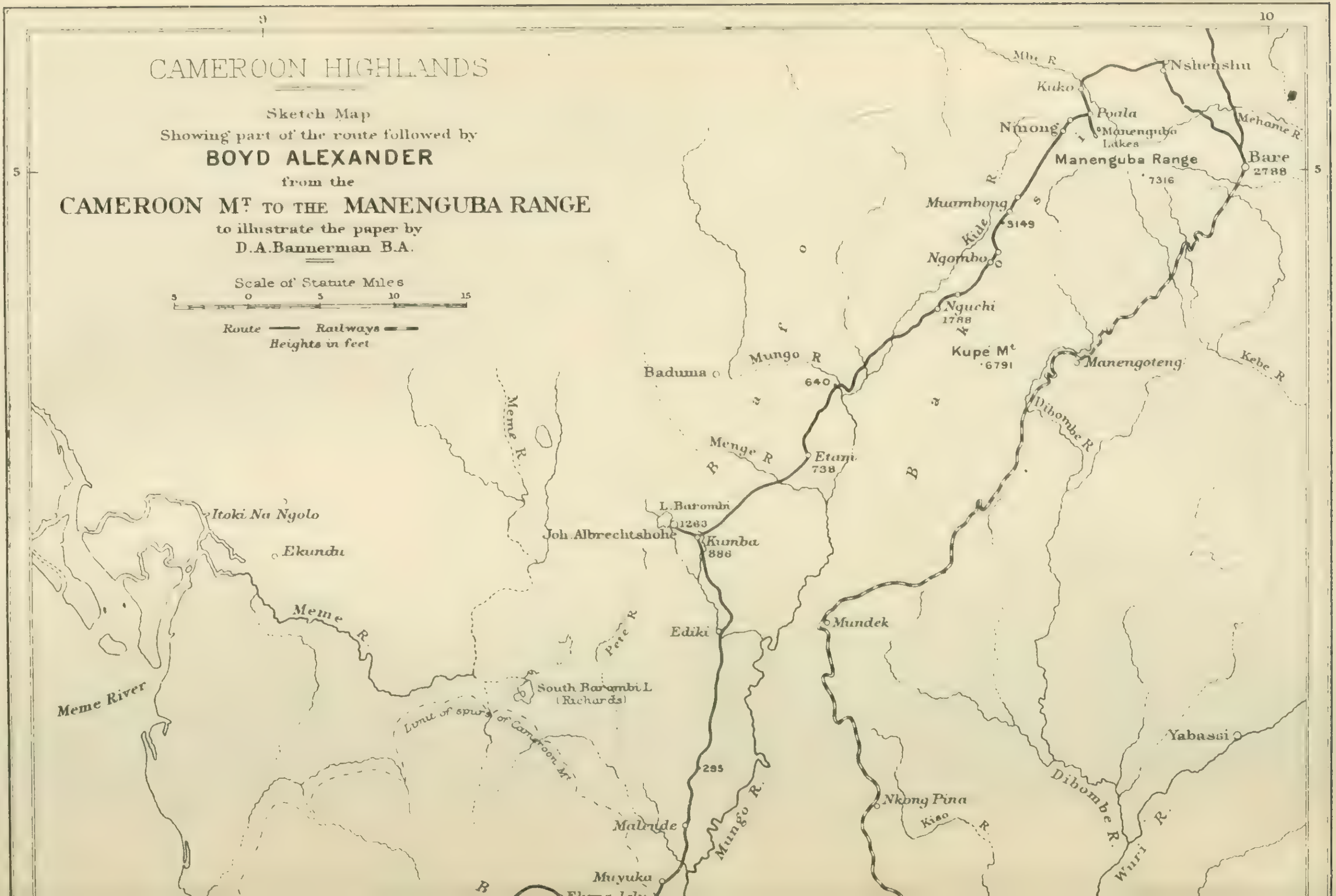
Iynx thorbecki Reichw. Orn. Monatsb. 1912, p. 126: Kamerun.

No measurements given, but is said to differ from *J. r. pulchricollis* by its larger bill, ground-colour of upperside more red-brown; below, broader stripes, and there is also some difference in the red-brown of the neck. This race is not represented in the British Museum collection.

Range. Cameroon.

JYNX RUFICOLLIS COSENSI C. Grant, op. cit.

Size larger; wing 101–94 mm. Characters as given above in the description.



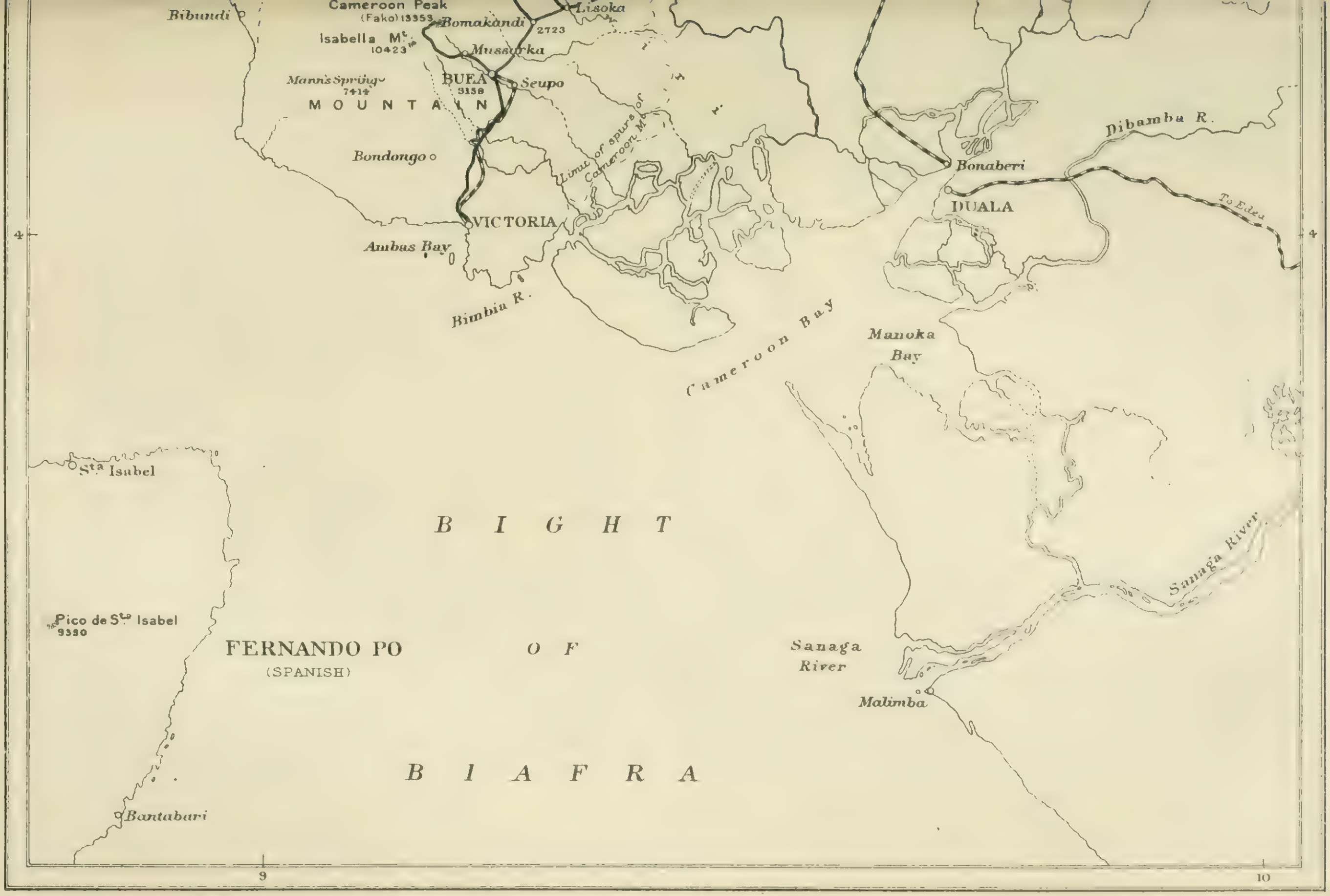
CAMEROON HIGHLANDS

Sketch Map
Showing part of the route followed by
BOYD ALEXANDER
from the
CAMEROON MT TO THE MANENGUBA RANGE
to illustrate the paper by
D. A. Bannerman B.A.

Scale of Statute Miles

Route —— *Railways* ▬ ▬
Heights in feet

9
10
5
5
15
Mbu R.
Nshenshu
Kuko
Poala
Mehame R.
Nmong
Manenguba Lakes
Manenguba Range
7316
Bare
2788
Muambong
3149
Kide R.
Ngombo
Nguchi
1788
Kupe Mt
6791
Manengoteng
Kebe R.
Baduma
Mungo R.
640
Dibombe R.
Menge R.
Etam
738
Meme R.
L. Barombi
1263
Joh. Albrechtshohe
Kumba
886
Itoki Na Ngolo
Ekundu
Meme R.
Pete R.
Ediki
Mundek
South Barombi L.
(Richards)
Meme River
Limit of spurs of Cameroon Mt
295
Yabassi
Nkong Pina
Kiso R.
Dibombe R.
Wuri R.
Mungo R.
Malende
Muyuka


Bibundi
Cameroon Peak
(Fako) 13353
Bomakandi
Lisoka
2723
Isabella Mt.
10423
Mussurka
Mann's Spring
7414
BUEA
3158
Seupo
MOUNTAIN
Bondongo
Limit of spurs of Cameroon Mt.
Bonaberi
Dibamba R.
DUALA
To Edea
4
VICTORIA
Ambas Bay
Bimbia R.
Cameroon Bay
Manoka Bay
Sta. Isabel
BIGHT
Pico de Sta. Isabel
9350
FERNANDO PO
(SPANISH)
OF
Sanaga River
Sanaga River
Malimba
BIAFRA
Bantabari
9
10

Range. British East Africa and Uganda.

One or two apparently young birds of this race show banded feathers on the throat intermixed with red-brown feathers. As, however, Hartlaub's description and plate give a distinctly clear throat and upper neck, without a trace of red-brown, I am compelled, with the evidence before me, to give the British East-African bird a new name.

[To be continued.]

XXIV.—*Report on the Birds collected by the late Mr. Boyd Alexander (Rifle Brigade) during his last Expedition to Africa.*—Part IV. *The Birds of Cameroon Mountain.* By David A. Bannerman, B.A., M.B.O.U., F.R.G.S.

(Plates VI. & VII.*)

The fourth report on the Alexander Collection, which is here issued, deals with the birds obtained on Cameroon Mountain only, where, as will be seen by the following pages, an exceptionally fine series of skins was obtained †.

General Features of Cameroon Mountain.

By glancing at the map (Plate VI.) it will be seen that the western slopes of the mountain rise almost from the sea-shore.

The following brief description appears in the 'Africa Pilot':—"The base of Cameroon Mountain is nearly twenty miles in diameter, and the highest Peak, named Mongo-ma-loba, is 12,992 feet ‡ above high water; the mountain is covered with trees of luxuriant growth nearly to the summit, but one bare brown ridge extending from the eastern side towards the sea, when seen from a distance, appears to be composed of lava. The Peak of Cameroon stands so boldly above the surrounding pinnacles that the descent seems unbroken, giving to the whole the appearance of one vast mountain rising from a single base, although a peak, about two miles inland and seven miles N.W. of Ambas Bay, named Little Cameroon, rises to a height of 5728 feet."

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* *Lagonosticta dybowskii* the second species figured on plate vii. will be dealt with in Part. V. of this Report.

† I am much indebted to Mr. Ogilvie-Grant for allowing me to work out this valuable collection and for looking over the proof-sheets of my paper.

‡ The height of Cameroon Mt. has recently been ascertained to be 13,353 feet.

As might be expected, the avifauna of Cameroon Mountain is closely allied to that of the highlands of Fernando Po, but many species are peculiar to each locality. The number of forms which have been described as new from Cameroon Mountain is remarkable, and of these no less than 33 are represented in the present collection, *e.g.* :—

1. Francolinus camerunensis.
2. Columba arquatrix sjöstedti.
3. Haplopelia simplex inornata.
4. Mesopicus johnstoni.
5. Campothera tullbergi.
6. Psalidoprocne fuliginosa.
7. Alseonax murinus obscurus.
8. Trochocercus albiventris.
9. Cryptolopha camerunensis.
10. Graucalus cæsius preussi.
11. Bleda poliocephala.
12. Bleda tephrolæma.
13. Turdinus monachus.
14. Turdus nigrilorum.
15. Turdus crossleyi.
16. Cossypha isabellæ.
17. Saxicola salax pallidigula.
18. Cisticola discolor.
19. Bradypterus camerunensis.
20. Poliolais alexanderi.
21. Prinia epichlora.
22. Laniarius atroflavus.
23. Dryoscopus angolensis grisescens.
24. Zosterops stenocricota.
25. Speirops melanocephala.
26. Cinnyris oritis.
27. Cinnyris preussi.
28. Anthus camaroonensis.
29. Poliospiza burtoni.
30. Pyromelana xanthomelas phœnicomera.
31. Sycobrotus tephronotus.
32. Heterhyphantes melanogaster.
33. Onychognathus preussi.

Of these the majority appear to be restricted to the type locality and the immediate neighbourhood.

Zones of Vegetation.

Unfortunately Alexander does not give a very clear account of the vegetation zones, which in a mountain of over 13,000 feet must be very marked. I have, however, found a short description, written by Sir Joseph Hooker *, from which some idea may be formed, and from which I quote the following :—"This noble group attains 13,100 feet of elevation, and consists of many peaks, all of volcanic origin, crowning an irregular short littoral range. From Mr. Mann's* descriptions, the Cameroons Mountains present a dense forest region up to about 7000 feet, when open grassy fields succeed, with bushes of *Hypericum*, *Pittosporum*, *Adenocarpus*, *Pygeum*, *Leucothoë*, *Ericinella*, *Myrica*, and various herbaceous plants. The many peaks which rise above this elevation are either stony and barren (being all formed of lava, scoriæ, and basalt), or are dotted with tufts of grass and a few other herbaceous plants."

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* Journ. Proc. Linn. Soc. vii. 1864, p. 175.

Sir Joseph Hooker adopted the altitude of 5000 feet as the lower limit of the temperate flora, because both on the Cameroon and Fernando Po Mountains the temperate forms preponderated at that elevation ; he goes on to say :—"In these mountains, however, as in all other tropical ones, on the one hand tropical genera and species ascend to this and to much greater elevations, and on the other some temperate forms descend considerably lower than their respective temperatures would lead us to expect. This is partly owing to the very varied conditions of exposure, humidity, and temperature which may be found at the same elevation in a mountain region traversed by gorges and ridges, and still more to the equable annual temperature favouring both the ascent of the tropical forms and the descent of the temperate."

How far this state of things affects the bird population of Cameroon Mountain it is hard to say, but it is certain that many forms which are dealt with in the following pages are confined to one of the three main belts of vegetation :— The forest, the tree-fern, or the grass-country.

The main features of Cameroon Mountain may be described as follows :—

1. Sea-level to 3000 ft. : apparently well wooded ; but a certain amount of clearing has taken place.
2. 3000 to 7000 ft. : dense forest.

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* A renowned botanical collector.

3. 7000 to 7500 ft.: tree-fern belt.

4. Above 7500 ft. the forest begins to give way to grass-country.

5. 8000 ft. and upwards.

   (*a*) The first ridge of the Peak is reached, grass-grown and scarred by deep channels and cavernous fissures.

   (*b*) Above the grass-country the lava-beds commence covered with a diminutive species of broom and with small heath-like plants.

   (*c*) The summit of the Peak, 13.353 ft., is perfectly barren except for tufts of dark spongy moss, and is composed of fresh-looking ashes.

The forest region naturally claims the largest number of species, as it also covers the greater area; many more inhabit the grass-land and plateau above the forest, while several remarkable forms were discovered at the Peak itself, amongst which *Anthus camaroonensis* may be noted.

Amongst the English explorers who have made known the wealth of Cameroon Mountain, the names of Sir Richard Burton and Sir Harry Johnston, whose collections were described by Gray * and Shelley †, and in later years of Boyd Alexander, will stand out as the most prominent. In the magnificent collection which Alexander bequeathed to the British Museum almost all the rarer species are represented.

Swedish, Austrian, and German naturalists have been busy during recent years in Cameroon, and two notable scientific expeditions have been at work. The first complete ornithological work of importance is that of the Swede, Yngve Sjöstedt, who has written an excellent article entitled "Zur Ornithologie Kameruns" (Kong. Svensk. Vetenskaps-Akad. Handlingar, 1895, pp. 1–120).

Dr. Reichenow has published many short papers in the 'Ornithologische Monatsberichte,' but the most important contribution is the Report on the Ornithological Results of the German Cameroon Zoological-Botanical Expedition of 1908–9, published in Berlin (Mitt. Zool. Mus. v. 1911, pp. 205–258).

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* Ann. Mag. Nat. Hist. vol. x. 1862, pp. 443–445.

† P. Z. S. 1887, pp. 122–126.

The explorers Dr. Preuss and Zenker have also sent fine collections from the Cameroon highlands to Europe.

A paper on a collection of birds is exceedingly dull reading unless some knowledge of the character of the country, from which the birds were obtained, is gained. I therefore make no apology for including extracts from Alexander's account of his explorations, by the kind permission of his brother, Mr. Herbert Alexander.

My thanks are due to Mr. Tom Iredale for his help in finding many references for me, to Mr. Claude Grant for allowing me to use the unpublished sheets of his MS., and to Mr. Wells for kindly putting the paper in systematic order.

At the end of this paper I have given a list of all the species known to have been obtained on or at the base of Cameroon Mountain.

As part of Cameroon Mountain I include for this purpose the shore-line from Victoria to Bibundi and inland as far north as south Barambi Lake (Richards), where the spurs of the mountain end (*vide* Map, Pl. VI.).

Boyd Alexander's account of Cameroon Mountain.

On March 26th we struck camp and went on board the 'Annobon,' which left for Victoria, where we arrived about 8 A.M. . . . . The next day we made an early start and arrived at Buea about 11 o'clock. Altogether from Victoria the trek is about five hours along a good road, which ascends by gentle gradients. The altitude of Buea is 3000 feet. . . . I made a camp in the best place I could find among some rather rank grass just above the station proper.

I left for the mountain on March 28th. Except where the Germans have cleared the ground above Buea for their cattle, the forest begins about a mile above the station. A two hours' strenuous pull through the forest in a north-westerly direction brought us to a clearing where a good bungalow has been built . . . . I decided to work the forest from here, and made a camp just above the house. . . . Since arriving at Victoria it has rained every day, which is unusual here at this time of year. The rainy season does not commence till the end of June. We scarcely see anything of the sun up here. Depressing mists come over in great waves . . . blurring the trees to phantoms, and the shaggy tresses of lichen which stream from the boughs add to the weird effect. It is difficult under these conditions to get the skins to dry, and we have had to put the mammal skins over a wood-fire. The forest, which ascends to a height of something like 7000 feet, is very dense, and consequently I find the collecting work very difficult. I lose on the average half of what I shoot. I am now employing the men in cutting paths in all directions, which I think will give me better chances. . . . I shall not make a daily record of my work at Müssarka, one day is so very like another. . . . While I have been collecting the men have made a road to the top of the first ridge, the most difficult part of the ascent, being the steepest. This took eight days.

The mountain is divided into three ridges; the first, above the forest, is grass-grown and scarred by deep channels and cavernous fissures. Between the first and second ridges the course lies over old lava-beds interspersed with grass and a species of broom, a decorative shrub with small dark green leaves. . . . . On the top of the second ridge a small plateau, about three-quarters of a mile in width, runs up to the base of the Peak itself.

On April 15th, the road being completed, we made an early start for the mountain with the intention of making a camp on the first ridge. . . . It is generally towards evening and the early morning that the hill is visible, and then it is that a fine panoramic view of the land below can be obtained; the Cameroon River and its many creeks intersecting a well-wooded country show out sharp and clear. . . . The ascent was successfully accomplished to the first ridge, which is about 8000 feet. Here I made a camp. The actual time taken from Müssarka was an hour and twenty-five minutes.

. . . . The western portion of the mountain has much less of lava-beds and more of grass-land. Looking due west from the camp, about three miles distant, one sees the wood creeping up to a small peak, and directly behind this the small Cameroon Peak, which is also thickly wooded.

On April 17th I left to ascend the Peak, and reached the summit at two o'clock, the actual ascent taking one hour and fifty minutes. At the base of the Peak there are old lava-beds, where the stones are now thickly coated with a greenish lichen. A pretty red heather also is to be found growing in thick bunches. In the last portion of the ascent one sinks ankle-deep in fine ashes. The summit is a most forbidding-looking place, nothing more than a series of deep craters, or vast ash-pits would better describe them. There are at least five of these, and they are so fresh-looking that the ash might have been thrown up but yesterday. There are no weeds nor grass to tell their age, but here and there grow large tufts of a spongy, dark green moss. It was pretty cold, with a maximum temperature of 55° and minimum 50° at 2.30 P.M. Continual mists kept passing over us, but now and again the sun would part them and disclose to view the mountain below us, and even the blurr of distant forest-land beyond.

We succeeded in creeping up to the highest point, which terminates in a kind of promontory, and is actually the rim of a very deep crater where the lava has made its exit. I . . . had to lie down to take a photograph of the land below, which showed a picturesque group of grass-covered mounds, or rather, extinct craters, lying to the west.

On the 18th of April José and I left to try and gain the small Cameroon Peak by following the first ridge in a due westerly direction, but it turned out to be farther off than it looked. After two hours we gained a wooded ravine. On the other side of this the forest-growth crept up the hill to cover the first small Peak, which I have already mentioned. The trees in this ravine were of scarecrow appearance, which was accentuated by the long tresses of lichen streaming from their limbs.

On April 23rd one of the Buea hunters arrived to help me finish the collecting here, especially to try and obtain a rare Francolin which seems to keep entirely to the forest growth above our camp. Often towards sundown we hear its loud cry in some steep valley above us. I feel convinced the bird is different from that found above Buea.

April 24th.—The hunter left early . . . . and came back about midday with the bush-fowl I wanted. It is a remarkable species, and I think will be new to science*. In the meantime the men are making a path with the idea of reaching the small Cameroon Peak. The path runs along the edge of the forest-growth before the grass is reached.

The collecting is going on well. Several of the Fernando Po species, or, I hope, their near allies, have turned up . . . . and within the last day or two I have, as it were, struck a new vein in bird-life here, and that is in the forest at an altitude of about 4000 feet. As soon as the road to the small hill is made, I shall leave Müssarka and make a camp in the forest to work the ground at this altitude.

On April 26th, the road having been finished, José and I started for the small hill, which we reached after a climb of an hour and forty minutes. I shall have to give up the idea of exploring the smaller Cameroon Peak; it is too far.

At the top of the hill we obtained a fine view of the Fernando Po Peak—my aneroid registered 8000 feet.

[Here follows an account of the great eruption of Cameroon Mountain in April 1909, which has already been published in the Journal of the Royal Geographical Society.] Alexander continues:—

It was extremely fortunate that our work was practically finished when the earthquake happened, and I mean to leave now for Bituti, a small village about two hours from Victoria, so that José can go down and send off the collections by an English steamer.

On May 7th left for Buea, and on the 9th shifted our camp close to the edge of the forest. . . . To the south there is always a fine panoramic view to be obtained, the whole country mapped out below one, and then the sea beyond. . . . My chief object is to work the lowest portion of the forest, and then start for the Manenguba Range *.

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* This proved to be the case. It has been named *Francolinus camerunensis* Alex. See p. 481.

Systematic List.

1. **Francolinus camerunensis.**

Francolinus camerunensis Alexander, Bull. B. O. C. xxv. 1909, p. 12 : Cameroon Mt. ; id. p. 125.

a. ♀. Cameroon Mt., 7000 ft. 24. iv. 09. (Type of the species.)

b–d. ♂ ♀ ad. et ♀ [? ♂ imm.] Cameroon Mt. 8. v. 09.

This interesting Francolin was described several years ago by Mr. Ogilvie-Grant on behalf of Boyd Alexander. A very full description of the type (a female) appeared in the Bulletin of the British Ornithologists' Club, p. 12. Later, on p. 125 of the same volume, Mr. Ogilvie-Grant gave a description of the adult male and what he considered to be the immature male, and remarks :—"At first sight one is led to believe that the male of *F. camerunensis* represents a quite distinct species, for the plumage is very different from that of the female type ; but along with the adult male Mr. Alexander procured a second adult female similar to the type, as well as an immature male bird (which has been marked "♀," obviously an error). This latter specimen, which is in partially adult male plumage, clearly proves the relationship between the two adult birds. A parallel instance of this difference in the sexes among African Francolins is to be found in *F. hildebrandti* and *F. johnstoni*,"

When first I examined the four birds mentioned, and before I had read Mr. Ogilvie-Grant's remarks in the 'Bulletin,' I had certainly formed a different opinion as to the relationships of the birds in question to that at which he had arrived, believing the females to be young birds. Mr. Ogilvie-Grant, who is well known as an authority on the game birds of the world, assures me that the opinion

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* This he did on the 21st of May, 1909 ; the narrative of that part of his journey will be continued in Part V.

I had formed was erroneous and I therefore bow to his superior knowledge on this subject. The point seems worth mentioning so that others may avoid falling into the same error, as I apparently had done myself.

Concerning this species Alexander writes from his camp on Cameroon Mountain as follows :—

"April 23rd.—Herr Martens . . . . has kindly sent me up one of the Buea hunters to help me to finish the collecting here, especially to try and obtain a rare Francolin, which seems to keep entirely to the forest-growth above our camp. Often towards sundown we hear its loud cry in some valley above us. I feel convinced the bird is different from that found above Buea. The hunter, who knows a good deal about the animals and birds of these parts, is of the same opinion.

"April 24th.—The hunter left camp early with one of my 12-bores, and came back about midday with the bush-fowl I wanted. It is a remarkable species and I think will be new to science."

In a later note Alexander accentuates the fact that this Francolin is *very* rare, has a very loud cry, and frequents the thick forest around and below Buea, but is not found above.

2. Vinago calva.

Columba calva Temm. & Knip, Pig. 1811, p. 35, pl. vii.: Loango (French Congo).

a. ♂ ad. Cameroon Mt. 10. v. 09.
b. ♂ ad. ,, ,, 15. v. 09.

Much confusion appears to have arisen over the West African Fruit-Pigeons. The typical locality from which Temminck described *V. calva* is Loango in the French Congo, and I may state at once that this is the only form of *V. calva* which I recognise, I cannot distinguish *Vinago calva nudirostris,* which Swainson described from Senegal, neither can I recognise *Vinago calva sharpei* described by Reichenow. On this question I have come to the same conclusion as Mr. Claude Grant, who has given his reasons for rejecting these two subspecies in the 'Ibis,' 1915, p. 37. I shall not therefore discuss the matter further.

[Found sparingly distributed in the forest above Buea.—B. A.]

3. Columba arquatrix sjöstedti.

Columba sjöstedti Reichw. Journ. für Orn. 1898, p. 138: Cameroon Mt.

a–f. ♂ ♀ ad. et ♀ imm. (Nos. 1–5, 10). Cameroon Mt. 29th March–31st April, '09.

C. a. sjöstedti is distinguished from typical *C. arquatrix* by its smaller size and by having the crown of the head uniform grey. Moreover, it is much more closely spotted on the underparts.

[Not common, found in the high altitudes above 6000 feet.—B. A.]

4. Haplopelia simplex inornata.

Haplopelia inornata Reichw. Journ. für Orn. 1892, p. 221: Buea, Cameroon Mt.

a. ♂ ad. (No. 4). Cameroon Mt. 12. iv. 09.
b. ♀ ad. (No. 1). ,, ,, 22. iv. 09.
c. ♀ ad. (No. 3). ,, ,, 23. iv. 09.
d. ♀ ad. (No. 2). ,, ,, 25. iv. 09.

Since writing on the birds of Prince's Island, St. Thomas, and Annobon, I have spent a considerable time in working at the members of the genus *Haplopelia*. I have had to practically monograph the entire group, and the results will be published in a separate paper in the next number of the 'Ibis.' I have there gone very fully into the question of the validity of each species, and shall not therefore touch on the matter here.

As the male has never apparently been described I append the following:—

Adult male. Forehead white, becoming greyer towards the crown. Occiput darker grey than the crown, and viewed in certain lights appearing brilliant green and in others shining amethystine, which colour extends on to the hind-neck, sides of the neck, and upper part of the mantle.

On the lower part of the mantle the feathers are brown at the base followed by a wide band of deep purplish-blue and broadly margined with shining peacock-green. Rest of the upperparts, including the wings and middle pair of tail-feathers, purplish-brown glossed with amethystine. Outer pairs of tail-feathers blackish, very broadly tipped with dove-grey on both webs. Throat white. Entire underparts grey including the under tail-coverts, becoming whitish on the belly. Breast glossed with pinkish or greenish according to the angle in which the light falls upon the plumage. Scapulars and under wing-coverts sooty-brown.

Culmen 13 mm.; wing 147; tail 125; tarsus 28.

[Specimen described: No. 4. ♂ ad. Cameroon Mt. 12. iv. 09. Boyd Alexander Coll.]

Adult female. Forehead grey, the feathers of the crown, occiput, sides of the neck, and upper part of mantle tipped with shining amethystine or emerald-green. The feathers of the lower part of the mantle brown at the base followed by a band of shining emerald-green and tipped with amethystine. Rest of the upperparts olive-brown, including the middle pair of tail-feathers. Outer tail-feathers blackish broadly tipped *on the inner web only* with dusky-grey. Chin whitish; cheeks grey-brown. Entire underparts cinnamon-brown, becoming pale cinnamon on the under tail-coverts and whitish on the middle of the belly. Underside of the wing grey-brown; under wing-coverts sooty-brown.

Culmen 13 mm.; wing 148; tail 122; tarsus 27.

[Specimen described: No. 3. ♀ ad. Cameroon Mt. 23. iv. 09. Boyd Alexander Coll.]

From the above descriptions it will be seen that the Cameroon Pigeon is only subspecifically distinct from *Haplopelia simplex*.

[Rare, found in the forest above Müssarka.—B. A.]

5. Strix nuchale.

Syrnium nuchale Sharpe, Ibis, 1870, p. 487: Fantee Country, Gold Coast.

a, b. ♂ ♀. Cameroon Mt. 24. iv. 09.

S. nuchale takes the place of *S. woodfordi* in West Africa. Sharpe described the type of *S. nuchale* out of a collection of birds from the Fantee Country, but does not give any particulars of the specimen which first came into his hands.

[Found in the forest near Buea.—B. A.]

6. Colius striatus nigricollis.

Colius nigricollis Vieill. Nouv. Dict. d'Hist. Nat. vii. 1817, p. 378 : Malimbe* (Portuguese Congo).

Colius nigriscapalis Reichw. Journ. für Orn. 1892, p. 180 : Buea.

a. ♂ ad.	(No. 3).	Buea.	18. v. 09.
b. ♀ ad.	(No. 1).	Cameroon Mt.	23. iv. 09.

Mr. Claude Grant, in his paper in the present number of the 'Ibis,' has monographed the races of *Colius striatus*.

Dr. Reichenow (*vide supra*) described a Mouse-bird from the actual locality in which Alexander obtained his specimens, but this subspecies cannot be upheld. I agree with Mr. C. Grant in uniting the birds from Cameroon Mountain with *Colius striatus nigricollis*, which subspecies ranges from Cameroon to Angola and eastwards to Niam Niam.

[Found at Buea and up to Müssarka, where it is not common.—B. A.]

7. Hapaloderma vittatum camerunense.

Apaloderma vittatum camerunense Reichw. Vög. Afr. ii. 1902, p. 216 : Cameroon.

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* There appear to be three places of this name which can be spelt in various ways, *i. e.*, Malimba, Malimbe, or Malemba, etc.:

1. At the mouth of the Sanaga River in Cameroon.
2. On the Sankuro River in the Lualaba District of the Belgian Congo.
3. On the coast of Kabinda or Portuguese Congo, lying between Gaboon and the mouth of the Congo River.

The latter is almost certainly the place from which the type of *C. s. nigricollis* was obtained. A Mons. Perrin, of Bordeaux, collected there in the early part of the 19th Century, and his birds were described by Levaillant and Vieillot.

a. ♂ ad. (No. 1). Cameroon Mt. 12. v. 09.
b. ♂ ad. (No. 2). ,, ,, 18. v. 09.

Hapaloderma vittatum (Shelley) was described from specimens collected at Mamboio, German East Africa. Dr. Reichenow distinguishes the form found in Cameroon as a subspecies, on account of its smaller size, wing 110–120 mm. as against 123–130 mm. in *H. vittatum.*

The examples of *H. v. camerunense* obtained by Alexander have wing-measurements of 113 and 114 mm. respectively, whereas specimens of typical *H. vittatum* in the British Museum bear out, and even exceed, Dr. Reichenow's measurements; the wing of a bird from Nyasaland measuring as much as 133 mm.

[Found in the forest above and to the east of Buea, not found to the west.—B. A.]

8. Cuculus solitarius.

Cuculus solitarius Steph. Shaw's Gen. Zool. vol. ix. p. 84: Camdeboo Mts. (Cape Colony).

a, b. ♂ ♂ ad. (Nos. 1, 2). Cameroon Mt. 25. iv. 09.

Stephen founded his description of *Cuculus solitarius* on Levaillant's "Oiseaux d'Afrique, p. 35, pl. 5," in which the type locality is given as " . . . le pays des Caffres jusqu'à l'entrée du Camdeboo," *e. g.* the Camdeboo or Compass Mountains in Cape Colony.

The two specimens obtained by Alexander differ in no way from typical examples.

[Found in the forest just above Buea.—B. A.]

9. Centropus monachus fischeri.

Centropus fischeri Reichw. Journ. für Orn. 1887, p. 517: Niaktaschi (N.E. Victoria Nyanza).

a. ♀ ad. (No. 1). Buea. 9. v. 09.

I have recently had the opportunity of looking over the large series of *Centropus monachus* in the British Museum with Mr. Claude Grant, who is engaged in working out the very important collection obtained by Mr. Willoughby Lowe in East Africa. Mr. Grant is carefully determining the geographical range of almost every species contained in this enormous collection, together with its various subspecies, and I have to thank him for allowing me to look through his valuable manuscript.

Centropus monachus was described by Rüppell (Neue Wirb. p. 57, pl. 21. fig. 2, 1845) from Kulla, Abyssinia (see Map, 'Ibis,' 1913, pl. xii.), and is confined to north-east Africa.

Westward of the Nile Valley its place is taken by *Centropus m. fischeri* Reichw., distinguished from the typical race by its darker colouring.

Two subspecies have been described by Neumann from West Africa, i. e. *Centropus monachus angolensis,* from north Angola, and *Centropus monachus occidentalis,* from the Ogowe River, both of which Mr. Claude Grant considers are synonymous with *C. m. fischeri.* The birds obtained by Alexander must therefore be referred to this subspecies.

10. **Turacus persa.**

Cuculus persa Linn. Syst. Nat. 12th ed. i. 1766, p. 171: Guinea.

a. ♂ ad. Buea, Cameroon Mt. 12.v.09.

In my opinion *T. persa* ranges from Senegambia south to the mouth of the Congo River. Dr. Reichenow has divided this Turaco into two races, and considers that the range of typical *T. persa* extends from Cameroon to Landana. The bird from "Upper Guinea," *i. e.* Senegambia to Cameroon, he calls *T. p. büttneri*, and separates it from *T. persa* on the grounds that the violet-blue back and tail are a little "purer" in colour and that the wing-coverts are less copper-brown. An examination of over twenty specimens in the British Museum from the two localities has convinced me that Dr. Reichenow formed his conclusions too hastily, and that there is not the slightest excuse for separating the forms from "Upper and Lower Guinea."

11. **Turacus meriani.**

Turacus meriani Rüpp. Arch. Nat. 1851, p. 319: Gaboon (*cf.* Verreaux, Rev. et Mag. Zool. 1851, p. 257); Schleg. Westerm. Toerako's, pl. 8.

a, b. ♂ ♀ ad. Cameroon Mt. 30. iii. 09.

Rüppell originally described this bird "from an unknown locality." The brothers Verreaux appear to have been the first to assign a habitat to this species, when in the Rev. et Mag. Zool. (op. cit.) they describe under the name *T. persa* what must undoubtedly have been an example of *Turacus meriani*; this specimen was obtained in Gaboon.

In the British Museum there are sixteen examples of this species from the following localities:—Gaboon, Cameroon, Fernando Po, and Southern Nigeria.

[Common.—B. A.]

12. **Corythæola cristata.**

Musophaga cristata Vieill. Analyse, 1816, p. 68: Africa.

a, b. ♀ ♀ ad. Cameroon Mt. 26. iv. 09.

13. **Gymnobucco calvus.**

Bucco calvus Lafr. Rev. Zool. 1841, p. 241: West Africa.

a, b. ♂ ♀ ad. (Nos. 1, 2). Cameroon Mt. 28. iii. 09.
c. ♀ ad. (No. 3). „ „ 29. iii. 09.
d. ♀ ad. (No. 4). „ „ 10. v. 09.

When Shelley wrote the Catalogue of Birds, vol. xix., he believed that *G. peli* and *G. calvus* were one and the same species.

G. calvus has been kept distinct by recent writers, and I think this is the more correct view. *G. peli* has a very prominent frontal tuft of bristles and a smaller bill. Mr. G. L. Bates gives excellent reason for considering the two forms to be distinct (*vide* Ibis, 1909, p. 17).

[Found in the forest near Buea.—B. A.]

14. **Barbatula leucolaima.**

Barbatula leucolaima Verr. Rev. et Mag. Zool. 1851, p. 263: West Africa.

a. ♂ (No. 1). Buea, Cameroon Mt. 18. v. 09.

This specimen is rather larger than usual and has a wing-measurement of 53 mm., thereby approaching examples of *B. l. mfumbiri* Ogilvie-Grant, which have wing-measurements of 55–59 mm.

15. Indicator conirostris.

Melignothes conirostris Cassin, Proc. Acad. Philad. 1856, p. 156 : Moonda River (Gaboon).

a. ♀ ad. (No. 1). Cameroon Mt. 19. iv. 09.
b. ♀ ad. (No. 2). ,, ,, 25. iv. 09.
c. ♀ ad. (No. 3). ,, ,, 11. v. 09.

This Honey-guide is met with in Cameroon and in Gaboon north of the Ogowe River, but does not occur in any of the islands in the Gulf of Guinea.

[Rare.—B. A.]

16. Prodotiscus insignis.

Hetærodes insignis Cassin, Proc. Acad. Philad. 1856, p. 157 ; id. 1859, pl. i. fig. 2 : Moonda River (Gaboon).

a. ♂ ad. (No. 1). Cameroon Mt. 23. iv. 09.

This remarkable little bird was first discovered on the Moonda River by Du Chaillu, and the type is preserved in the Philadelphia Museum. It is evidently a very rare species, and the example obtained by Alexander is the only specimen from West Africa in the British Museum.

Three allied species have been described from various districts in East Africa which, when more material is available, will probably turn out to be subspecies of *P. insignis,* which is the oldest name.

P. insignis Cassin, is the only form described from West Africa up to the present time. Mr. W. R. Ogilvie-Grant has kindly permitted me to look through a fine collection of birds (not yet the property of the British Museum) recently obtained by Mr. G. L. Bates from southern Cameroon. In this collection I have found another example of *P. insignis*, which Mr. Bates procured on the River Ja.

Thanks to Mr. Alexander and Mr. Bates, there is now in the British Museum a very fine working collection from Cameroon.

[In the forest above Buea; rare.—B. A.]

17. Dendropicus lafresnayei.

Dendropicos lafresnayi Malh. Rev. et Mag. Zool. 1849, p. 533 : ? Africa.

a. ♀ ad. (No. 1). Buea, Cameroon Mt. 10. v. 09.

Sharpe has separated the Cameroon bird as *D. camerunensis*. So far as I can see from an examination of the specimens in the British Museum, the Cameroon race is indistinguishable from typical *D. lafresnayei*. I notice that Mr. G. L. Bates, who is well acquainted with the birds of southern Cameroon (the type of *D. camerunensis* was described from the River Ja and obtained by Mr. Bates), does not keep up the name in his paper, 'Ibis,' 1909, p. 21. Mr. Claude Grant was likewise unable to separate the Cameroon bird (*vide* Ibis, 1915, p. 461).

[Obtained at Buea, but not found above.—B. A.]

18. Mesopicus johnstoni.

Poliopicus johnstoni Shelley, Proc. Zool. Soc. 1887, p. 122 : Cameroon Mt. (6000 ft.).

a. ♂ ad. (No. 2).	Cameroon Mt.	11. iv. 09.
b. ♀ ad. (No. 1).	,, ,,	29. iii. 09.
c. ♂ ad. (No. 3).	,, ,,	31. iii. 09.
d. ♂ ad. (No. 5).	,, ,,	1. iv. 09.
e. ♀ ad. (No. 4).	,, ,,	9. iv. 09.
f. ♂ imm. (No. 6)	,, ,,	6. v. 09.
g, h. ♂ ♂ ad. (Nos. 7, 9).	,, ,,	11. v. 09.
k. ♀ ad. (No. 8)	,, ,,	16. v. 09.

This species was only represented in the British Museum by two specimens, the types collected by Sir Harry Johnston and described by Shelley in 1887. Shelley pointed out that the species is remarkable for having the underparts uniform in colour without any indication of stripes. The large series which Alexander has now procured bear out the original description.

The bird is evidently confined to the high forest of the Cameroon Range.

[Rare in the forest.—B. A.]

19. **Campothera tullbergi.**

Campothera tullbergi Sjöstedt, Journ. für Orn. 1892, p. 313 : Itoki Na N'Golo (Cameroon).

a. ♂ ad. (No. 2). Cameroon Mt. 11. v. 09.
b. ♂ ad. (No. 1). „ „ 12. v. 09.

This fine *Campothera* was discovered by Sjöstedt at Itoki, which is situated north of Ekundu. (See Map, Pl. VI.)

It is new to the British Museum Collection, and is probably confined to the Cameroon Mountain district.

The bird is figured by Sjöstedt in the Sv. Ak. Handl. xxvii. 1895, pl. iv. fig. 1, but the plate is not by any means a good one. It shows, however, the red patch at the bend of the wing, which is almost concealed when the wings are folded.

[Rare ; found in the forest above Buea.—B. A.]

20. **Psalidoprocne fuliginosa.**

Psalidoprocne fuliginosa Shelley, Proc. Zool. Soc. 1887, p. 123 : Cameroon Mt.

a. ♂ (No. 1). Cameroon Mt. 6. iv. 09.
b. ♀ (No. 2). „ „ 13. iv. 09.
c. ♂ (No. 3). Buea, Cameroon Mt. 12. v. 09.

This species appears to be confined to the Cameroon Mountain district, where it has been obtained at Buea, Victoria, Mann's Spring, and Bibundi, the last-mentioned place situated on the coast. (See Map, Pl. VI.)

[Found on the mountain and also around Buea.—B. A.]

21. **Alseonax murinus obscurus.**

Alseonax obscura Sjöstedt, Orn. Monatsber. 1893, p. 43 : Cameroon Mt.

a, *b.* ♂ ♀ ad. (Nos. 1, 2). Cameroon Mt. 31. iv. 09.
c. ♀ (No. 3). Buea. 10. v. 09.

This is another of the many forms which are apparently confined to the Cameroon and Manenguba Mountains. Although described as a species, it can certainly only be considered subspecifically distinct from *A. murinus* from east Africa. The underparts are slightly less brown and the upperside greyer in the Cameroon bird.

[Common up to 8000 feet in the forest.—B. A.]

22. Trochocercus albiventris.

Trochocercus albiventris Sjöstedt, Orn. Monatsber. 1893, p. 43: Cameroon Mt.

a. ♀ ad. (No. 6). Cameroon Mt. 2. iv. 09.
b, c. ♂ ♂ ad. (Nos. 4, 5). „ „ 3. iv. 09.
d, e. ♂ ♀ ad. (Nos. 1, 3). „ „ 7. iv. 09.
f. ♂ ad. (No. 2). „ „ 12. iv. 09.

T. albiventris is closely allied to *T. albonotatus* Sharpe, but may at once be recognised by having the tail uniformly coloured.

This adds another species to the already very large number of forms of which Cameroon Mountain is the type locality.

[Common in the forest from Buea upwards.—B. A.]

23. Elminia teresita.

Elminia teresita Antinori, Catalogo, 1864, p. 50: Djur, Bahr el Ghazal.

a. ♀. (No. 1). Buea, Cameroon Mt. 10. v. 09.

Reichenow includes *E. teresita* in the synonymy of *E. longicauda* (Swains.), but I do not agree with him in this; the very much whiter belly of *E. teresita* is alone sufficient reason for separating the two forms. Dr. Reichenow indiscriminately "lumps" species and subspecies which he has not had an opportunity of examining, under one heading, and has thus caused endless confusion for workers on African birds. Antinori obtained the type of *E. teresita* at Djur, Bahr el Ghazal, in 1861. The species ranges over the greater part of central Africa.

24. Platystira cyanea.

Muscicapa cyanea Müll. L. N. S. Suppl. 1776, p. 170: Senegal.

a, b. ♂ ad. et ♀ imm. (Nos. 3, 1). Cameroon Mt. 13. iv. 09.
c. ♂ ad. (No. 2). „ „ 19. iv. 09.

[Not common.—B. A.]

25. Cryptolopha camerunensis.

Cryptolopha camerunensis Alexander, Bull. B. O. C. xxv. 1909, p. 13: Peak of Cameroon.

a. ♂ ad. (No. 1).	Cameroon Mt.	23. iv. 09. Type of the species.
b. ♂ ad. (No. 3).	„ „	11. v. 09.
c, d. ♂ ♀ ad. (Nos. 2, 4).	„ „	12. v. 09.
e. ♀ ad. (No. 5).	„ „	16. v. 09.

In the original description of this interesting species it is said to be "Nearly allied to *C. herberti* Alex. from Fernando Po, but the eyebrow-stripe and cheeks are dull soiled white, and the throat is white slightly tinged with rufous, whereas in the latter these parts are pale rust-colour."

[Found in the forest just above Buea.—B. A.]

26. Smithornis camerunensis.

Smithornis camerunensis Sharpe, Ibis, 1905, p. 469: River Ja, S. Cameroon.

a. ♂ imm. (No. 1). Cameroon Mt. 12. v. 09.

Mr. Ogilvie-Grant has already cleared up the confusion which existed over this species (*vide* Trans. Zool. Soc. xix. 1910, p. 400).

The specimen which Alexander has now obtained is particularly interesting for two reasons. First, it is the only example from the Cameroon highlands; secondly, it is the first young bird to be collected.

Compared with an adult male, it differs in having the underparts more creamy-white and the wide black shaft-streaks on the breast and sides duller and so less conspicuous; the under tail-coverts are not streaked. The most remarkable difference is exhibited on the upperparts, which are uniform olive, washed with rufous and not streaked in any way. Moreover, the white patch in the middle of the back is absent, only a single white feather showing when the feathers of the back are raised. The bill, which is blackish, is tipped with yellow on both the upper and under mandible.

I am not at all certain that *S. camerunensis* should not be considered only a subspecies of *S. capensis*.

[Found in the forest above and to the east of Buea, not found to the west.—B. A.]

27. Graucalus cæsius preussi.

Graucalus preussi Reichenow, Journ. für Orn. 1892, p. 183: Buea, Cameroon Mt.

a. ♂ ad. (No. 1). Cameroon Mt. 24.iv.09.
b, *c.* ♂ ♀ ad. (Nos. 2, 3). „ „ 11. v.09.
d. ♀ ad. (No. 4). „ „ 12. v.39.

This interesting Cuckoo-Shrike is very similar in appearance to *G. cæsius* and *G. c. purus.* It is distinguished from each by its smaller size: the wings of the two males obtained by Alexander measure 113 and 114 mm., and of the females 111 and 116 mm. respectively.

Mr. W. L. Sclater (Shelley, Birds of Africa, vol. v. pp. 221–224) gives the range of these three Cuckoo-Shrikes as follows:—

Graucalus cæsius: type loc. Kaffraria. Ranges from Cape Colony into Pondoland, Natal, and Zululand.

Graucalus cæsius purus: type loc. Mt. Elgon. Ranges over central and eastern Africa from the Nyasa-Tanganyika plateau to Abyssinia.

Graucalus cæsius preussi: type loc. Buea: "inhabits Cameroon."

The female specimen of *G. c. preussi*, which Mr. Sclater mentions as having been obtained by Alexander in Fernando Po, is possibly correctly referred to this species, but appears to be of a lighter grey colour throughout. It must be remarked, however, that the bird was obtained in Fernando Po in November, whereas the series with which I have compared it was secured in May.

The wing of the Fernando Po bird is slightly larger than the largest female from the mainland and measures 118 mm. When a series is available it may therefore prove to be distinct on the grounds that it is larger and paler.

[Found in the forest above Buea, not in the higher altitudes.—B. A.]

28. Bleda poliocephala.

Xenocichla poliocephala Reichw. Journ. für Orn. 1892, p. 189: Buea, Cameroon Mt.

a–d. ♂ ♀ ad. (Nos. 1, 2, 3, 4). Cameroon Mt. 11. v. 09.

B. poliocephala is a very beautiful species, with the throat white and rest of the underparts golden yellow. The head is grey forming a distinct cap, and the rest of the upperside olive-green. As is usual with this genus, the male is very much larger than the female, and has a wing-measurement of 107 mm. as against 91·5 in the female. The species is apparently confined to Cameroon Mountain.

[Found in the forest above Buea; not common.—B. A.]

29. **Bleda tephrolæma.**

Trichophorus tephrolæma Gray, Ann. Mag. Nat. Hist. vol. x. 1862, p. 444: Cameroon Mt.

a–d. ♂ ♀ ad. (Nos. 1, 2, 3, 5). Cameroon Mt. 28. iii. 09.
e, f. ♂ ♂ ad. (Nos. 4, 6). „ „ 31. iii. 09.

I have been unable to separate specimens of *B. tephrolæma* from Fernando Po from typical examples from the Cameroon Mts.; the latter are, however, on an average slightly larger and possibly a little lighter on the underside. The difference is so slight that the island form is best united with that of the mainland.

[Very common in the forest.—B. A.]

30. **Bleda poensis.**

Phyllostrophus poensis Alexander, Bull. B. O. C. xiii. 1903, p. 35: Fernando Po.

a. [♀] ♂ ad. (No. 1). Cameroon Mt. 23. iv. 09.
b. ♀ ad. (No. 3). „ „ 9. v. 09.
c. ♀ ad. (No. 2). „ „ 12. v. 09.

This is the first occasion upon which *B. poensis* has been obtained on the mainland.

Considerable differences in size exist between the two sexes, the males being larger in every way than the females. Specimen (No. 1), although said by the collector to be a female, is obviously a male bird, with the wing measuring 87 mm. as against 73 and 79 in the hens.

[Found in the forest near Buea, but not in the higher altitudes.—B. A.]

31. Turdinus monachus.

Turdinus monachus Reichw. Journ. für Orn. 1892, p. 193: Buea, Cameroon Mt.

a–l. ♂ ♀ ad. (Nos. 1–12). Cameroon Mt. 30. iii.–12. v. 09.

A large series of this interesting species was obtained, but two only were females.

The wing-measurements of the ten males vary from 63–70 mm., and the two females measure 67–68 mm.

In the 'Vögel Afrikas,' vol. iii. p. 741, Dr. Reichenow includes *T. claudei* Alexander in the synonymy of *T. monachus*. I have compared a series of the two forms (including the type of *T. claudei*) and agree with Alexander in considering that the Fernando Po bird is distinct, although at the time when he named this species he was evidently unaware of the existence of *T. monachus*.

The bird from Fernando Po may be distinguished by having the grey of the head and mantle extending much further down the back, these feathers are also longer and "looser" than in *T. monachus*. On the underside the feathers of the flanks and thighs are of a duller rufous-brown. I consider the Fernando Po bird a subspecies of *T. monachus*, and it should therefore be known as *Turdinus monachus claudei*.

[Common in the high altitudes in the forest 7000-8000 ft. The male has a pretty warbler-like song which is loud for the size of the bird.—B. A.]

32. Turdus nigrilorum.

Turdus nigrilorum Reichw. Journ. für Orn. 1892, p. 194: Buea, Cameroon Mt.

a–h. ♂ ♀ ad. (Nos. 1–8). Cameroon Mt. 28. iii.–24. iv. 09.

The above series of beautifully made skins of this Thrush is a most welcome addition to the national collection.

T. nigrilorum was described by Dr. Reichenow from the Cameroon Mountain, and appears to be confined to this district and the surrounding country. Specimens have been recorded from Buea on the lower slopes of the mountain and from Junge. It has also been obtained in the Manenguba Range.

Turdus nigrilorum has been kept as a species by Dr. Reichenow, while *T. lugubris* Bodd. (=*T. chiguancoides* Seebohm), which it so closely resembles, is reckoned to be a subspecies of *T. pelios*. This I do not agree with, and when the African forms of the genus *Turdus* have been worked out, *Turdus nigrilorum* will most certainly be relegated to subspecific rank. It appears to be only a representative race in Cameroon of the Senegambian Thrush, figured in Seebohm's Monograph of the Turdidæ, vol. i. pl. lxxviii.

[Widely distributed in the forest.—B. A.]

33. Turdus crossleyi.

Turdus crossleyi Sharpe, Proc. Zool. Soc. 1871, p. 607, pl. 47: Cameroon Mt.

a. ♂ ad. (No. 1). Cameroon Mt. 18. v. 09.

The rediscovery of this very rare Thrush on Cameroon Mountain is one of the most interesting results of the expedition. An adult specimen of *Turdus crossleyi* was obtained by Crossley in 1871, and since that date has remained the only example known. It is very curious that Sir Harry Johnston, Zenker, Sjöstedt, and other less famous collectors should have failed to obtain the bird again. The example now secured by Alexander is a fine adult male, similar in every way to the type, of which the sex was not ascertained. *T. crossleyi* has been very well figured in Seebohm's Monograph of the Turdidæ (vol. i. pl. xii. p. 37).

34. Cossypha isabellæ.

Cossypha isabellæ Gray, Ann. Mag. Nat. Hist. (3) vol. x. 1862, p. 443: Cameroon Mts.

a. ♀ imm. (No. 7). Cameroon Mt. 28. iii. 09.
b, c. ♂ ad. et ♂ imm. (Nos. 8, 9). „ „ 29. iii. 09.
d, e. ♂ ad. et ♀ imm. (Nos. 2, 5). „ „ 30. iii. 09.
f. ♂ imm. (No. 3). „ „ 3. iv. 09.
g, h. ♂ ad. et ♂ imm. (Nos. 6(*a*), 6(*b*)). „ „ 4. iv. 09.
k. ♂ ad. (No. 1). „ „ 7. iv. 09.
l. ♂ ad. (No. 10). „ „ 9. v. 09.

The birds in the above list marked "immature" differ from the adults in having the heads greyer and the general colour of the upperparts lighter. They do not show any other signs of immaturity. The series obtained by Alexander is a very fine one. *C. isabellæ* was named by Gray in honour of Lady Isabel Burton, who first brought examples of the species to this country.

[Found from above Buea to the limits of forest-growth.—B. A.]

35. Alethe poliothorax.

Alethe poliothorax Reichw. Orn. Monatsber. 1900, p. 6: Bangwa, in N.W. Cameroon.

a. ♂ ad. (No. 2).	Cameroon Mt.	14. iv. 09.
b. ♀ ad. (No. 1).	„ „	24. iv. 09.
c. ♂ ad. (No. 3).	„ „	12. v. 09.
d. ♂ ad. (No. 4).	„ „	16. v. 09.

This rare Robin-Chat was described from Bangwa, a district in north-west Cameroon situated about 125 miles north of Cameroon Mountain.

Its range is peculiar. It next turned up, as might be expected, in Fernando Po, where Alexander obtained a single bird (the type of *A. moori* Alex.), which has since been shown by Mr. Ogilvie-Grant and Dr. Reichenow to be synonymous.

Two examples obtained in the Mubuku Valley at 7000–8000 ft. by the Ruwenzori Expedition undoubtedly belong to this species. It was not met with in the Congo Forests.

Until Alexander obtained the bird on Cameroon Mountain, it had not previously been recorded from there.

[Rare, distributed from Buea upwards. Most difficult to obtain, keeping always to the thick undergrowth, where it creeps about in a mouse-like fashion, uttering at intervals a series of loud notes. It was found breeding.—B. A.]

36. Saxicola salax pallidigula.

Pratincola pallidigula Reichw. Journ. für Orn. 1892, p. 194: Buea, Cameroon Mt.

a. ♂ ad. (No. 8).	Cameroon Peak.	28. iii. 09.
b, *c*. ♂ ♂ imm. (Nos. 3, 7).	„ „	16. iv. 09.
d. ♀ ad. (No. 1).	„ „	16. iv. 09.

e. ♀ ad. (No. 6). Cameroon Peak. 17. iv. 09.
f. ♀ ad. (No. 2). ,, ,, 21. iv. 09.
g. ♂ ad. (No. 5). ,, ,, 27. iv. 09.
h. ♂ ad. (No. 4). ,, ,, 31. iv. 09.

This slightly larger race of *S. salax* was described by Dr. Reichenow from specimens obtained by Dr. Preuss on Cameroon Mt., from 2200–2700 metres.

It appears to be confined to Cameroon, but is said to have been obtained by Burton in Fernando Po.

In the Report on the Ruwenzori Collection (Trans. Zool. Soc. xix. 1910, p. 376), Mr. W. R. Ogilvie-Grant writing under *Pratincola salax* Verr. says:—"From typical *P. salax* from Gaboon Dr. Reichenow has separated the bird found at Buea, Cameroon Peak, under the name of *P. pallidigula*, disregarding the fact that Captain Shelley's name *P. axillaris* was given to the bird from the same locality (Cameroon, 7000 ft.) and has many years' priority." In a paper "On Birds from Cameroon" published by Shelley in the Proc. Zool. Soc. 1887, p. 125, he certainly records *P. axillaris* from Cameroon Mt. (8000 ft.), but this is not the type locality of the species, which was described from Mt. Kilimanjaro (7000 ft.), *vide* P. Z. S. 1884, p. 556. Reichenow's name *P. pallidigula* must therefore stand for the Cameroon Chat.

The immature birds have the feathers of the upperparts tipped with brown and of the throat tipped with black.

In the series obtained by Alexander the chief difference between it and typical *S. salax* is in size.

The wing-measurements of the three adult males from Cameroon Mountain are as follows: 80, 78, 76 mm.; and of the females, 77, 75, 72 mm.

It is also noticeable that the chestnut breast-band is duller chestnut in colour and somewhat wider in *S. s. pallidigula* than in *S. s. salax.* The width of the chest-patch is always a somewhat variable character in Chats of the same species, but in *S. s. pallidigula* the narrowest band is 17 mm. wide, while in ten examples of *S. s. salax* in the British Museum the widest chest-band measures only 10 mm. In two male examples from the Manenguba Mountains, which will be treated of in my next paper, the birds are slightly smaller and have the breasts of a paler chestnut colour.

[Found on the Peak and as far as Müssarka, alt. 6800 ft. —B. A.]

37. Cisticola discolor.

Cisticola discolor, Sjöstedt, Orn. Monatsber. 1893, p. 84: Cameroon Mt.

a. ♂ ad. (No. 1).	Cameroon Mt.	28. iii. 09.
b–e. ♂ ♂ ♂ ♀ ad. (Nos. 2, 3, 5, 6).	„ „	13. iv. 09.
f. ♀ ad. (No. 4).	„ „	22. iv. 09.
g. ♂ ad.	„ „	17. v. 09.

This fine Grass-Warbler appears to be confined to Cameroon Mountain, where the type was obtained at Mann's Spring, 7000 ft., and described by Sjöstedt. Two examples in the British Museum collected by Sir Harry Johnston in 1886 had been wrongly referred to *Cisticola ruficapilla* Fraser. The series obtained by Alexander is a very valuable one.

[Found at an altitude of 7000 ft. Breeding. It has a loud penetrating song.—B. A.]

38. Cisticola rufopileata.

Cisticola rufopileata Reichw. Journ. für Orn. 1891, p. 69: Nún River (Cameroon).

a. ♂ ad. Buea, Cameroon Mt. 17. v. 09.

The range of *C. rufopileata* is said by Reichenow to extend from the Niger to Angola. It appears that Reichenow renamed the bird obtained by Fraser on the "River Nún, western Africa" which Fraser called "*Drymoica ruficapilla*" (Proc. Zool. Soc. 1843, p. 16). Fraser's name was, however, preoccupied for the South African *D. ruficapilla* Sm., but his type locality "Nún River" must stand, as Reichenow did not describe the same bird from a different locality but only renamed Fraser's bird.

39. Bradypterus camerunensis.

Bradypterus camerunensis Alexander, Bull. B. O. C. xxv. 1909, p. 19: Peak of Cameroon.

a. ♂. (No. 1).	Cameroon Mt.,	7000 ft.	5. iv. 09. Type of the species.
b. ♂ imm. (No. 4).	,,	,,	10. iv. 09.
c. ♂ ad. (No. 2).	,,	,,	11. iv. 09.
d. ♂ imm. (No. 3).	,,	,,	24. iv. 09.

The type-specimen of this fine new form was sent from Cameroon by Boyd Alexander to Ogilvie-Grant, who exhibited the bird on his behalf at the November meeting of the British Ornithologists' Club in 1909.

In the original description *B. camerunensis* is compared with *B. brachypterus* (Vieill.) and with *B. sylvaticus.* It most nearly resembles the former, "but the upperparts are much darker brown, with but little trace of rufous, and the spotting on the upper chest is much fainter." A notable distinction is that *B. camerunensis* has only ten tail-feathers, whereas in *B. brachypterus* and *B. sylvaticus* there are twelve.

Specimens No. 3 and 4 are not fully adult and are each in a different stage of plumage.

No. 3 is almost similar to the type-specimen, but has not entirely lost the spotting on the breast which is almost obsolete in the fully adult bird. Moreover, it is a shade darker on the underside. It has, however, practically assumed the adult plumage which is perfectly fresh, and in consequence the bird is more richly coloured than the type, which is a little worn. The wing of this bird is fully grown.

Specimen No. 4 is quite a young bird and is so different from the adult that I shall describe it :—

Immature. Differs from the adult in having the upperparts of a darker brown. Chin and throat greenish-buff, the feathers on the upper breast tipped with earth-brown which gives to it a somewhat spotted appearance ; lower breast, flanks, and thighs earth-brown, belly yellowish-buff.

The measurements of the two adult birds are : bill 12·5 mm. ; wing 57–59 ; tail 56 ; tarsus 23.

[Rare, breeding, shy, extremely difficult to observe, always threading its way through the thick growth. The male utters a loud penetrating note. It is found from 3000 to 8000 feet.—B. A.]

40. **Calamocichla plebeia.**

Calamocichla plebeia Reichw. Orn. Monatsber. 1893, p. 178: Yaunde, Cameroon.

a, b. ♂ ♂ (Nos. 1, 3). Buea. 3. v. 09.
c, d. ♂ ♀ (Nos. 2, 4). „ 4. v. 09.

This rare bird had hitherto only been obtained from the type locality, *i. e.* Yaunde, which is situated about 150 miles east of Cameroon Mountain.

C. plebeia very closely resembles *C. poensis* from the island of Fernando Po, but appears to have the upperparts grey without the rufous tinge of the Fernando Po bird. The tail-feathers in *C. plebeia* have only a faint indication of the white tips which is one of the characters of *C. poensis*. The Fernando Po bird can certainly only be distinguished as a subspecies, although it has hitherto been assigned specific rank.

[Found in the long elephant-grass below Buea.—B. A.]

41. **Euprinodes cinereus.**

Euprinodes cinereus Sharpe, Ibis, 1891, p. 120: Mt. Elgon.

a. ♀ ad. (No. 2). Cameroon Mt. 10. iv. 09.
b. ♂ imm. (No. 1). „ „ 10. iv. 09.
c. ♂ imm. (No. 4). „ „ 24. iv. 09.
d. ♂ imm. (No. 3). „ „ 31. iii. 09.

A close comparison of the specimens from Cameroon with the series of *E. cinereus* and *E. c. sclateri* in the British Museum has induced me to unite the bird from Cameroon with typical examples of *E. cinereus* of Sharpe.

The adult bird (No. 1) from Cameroon Mountain agrees in every way with the type-specimen of *E. cinereus* except that the tail in the type-specimen measures 9 mm. longer than in any specimen from Cameroon. It must be remarked, however, that the type-specimen of *E. cinereus* has an exceptionally long tail, and that the tail in the other ten specimens from east Africa is of the same length as that of birds from the west coast. The four examples obtained on Cameroon Mountain are all in different stages of plumage.

Specimen No. 1, the youngest bird, has the entire underparts from the chin to the vent strongly washed with dirty olive-yellow, and the lower mandible whitish horn-colour except at the tip.

Specimen No. 3 is losing the olive-yellow underparts and beginning to assume the cinereous band across the chest. The lower mandible is becoming darker in colour.

Specimen No. 4 has entirely lost the yellowish belly and throat of No. 3 and has the underparts washed with cinereous; the bill is similar to No. 3.

Specimen No. 2 is fully adult, and has the whitish belly of typical *E. cinereus* when fully mature, and retains the cinereous chest-band, the throat and belly are whitish, and the bill has become entirely black.

I very much doubt whether *E. c. sclateri* Alexander described from Fernando Po (Bull. B. O. C. xiii. 1903, p. 36) can stand. If further investigation shows it to be a good subspecies, it will probably be found to be confined to Fernando Po. The specimens of *E. cinereus* here described from Cameroon Mountain greatly extend the known range of this species westward.

Dr. Reichenow (Vögel Afrikas, iii. p. 904) believes the *Euprinodes* from Cameroon Mountain to be referable to *E. c. sclateri,* in which case it will probably be found that *E. cinereus* and *E. c. sclateri* are synonymous.

The following are the variations in wing-measurements of twenty specimens in the British Museum of *E. cinereus* and *E c. sclateri.*

E. cinereus (typical examples from East Africa) 51–58 mm., (type 56 mm.).

E. cinereus (Cameroon Mt.) 52–55 mm.

E. c. sclateri (Fernando Po) 52–56 mm. (type 55 mm.).

[Found in the forest from 3000 ft. inhabiting the tops of the tall trees.—B. A.]

42. **Poliolais alexanderi.**

Poliolais alexanderi Bannerman, Bull. B. O. C. xxxv. 1915, p. 53: Cameroon Mt.

a. ♂ ad. (No. 1). Cameroon Mt. 6. v. 09. Type of the species.

This is the first member of the genus to be discovered on the mainland. The genus *Poliolais* was created by Alexander in the Bulletin of the British Ornithologists' Club, xiii. 1903, p. 36, and was represented by a single species, *P. helenoræ* Alexander from Fernando Po.

Alexander characterised the genus as follows: "Genus inter genera *Sylviella* et *Camaroptera* dicta intermedium, pedibus caudam longe superantibus et rectricibus externis pure albis distinguendum."

Curiously enough Boyd Alexander discovered, not only the type of the genus, which he described from Fernando Po, but also the only other member of the genus known to science. The latter was shot by him on Cameroon Mountain in 1909 and had been overlooked until I came to work on this important collection.

I have already described in detail this species in the Bulletin of the British Ornithologists' Club. *P. alexanderi* is distinguished at a glance from the other member of the genus by its uniform olive-green upperparts, grey throat and forehead, and by lacking the pale chestnut sides of the head and rufous-brown crown of *P. helenoræ*. The type of *P. alexanderi* is in the British Museum.

[Rare, found in the forest above Buea.—B. A.]

43. **Poliolais** sp.?

a. ♀ (No. 1). Cameroon Mt. 16. v. 09.

In the fine collection which Alexander obtained on Cameroon Mountain are two birds which unquestionably belong to the genus *Poliolais*. One. I have named *P. alexanderi*. The other, with which we have now to deal, is likewise represented by a single female example only, and for this reason I have refrained from giving it a name. Mr. Ogilvie-Grant and Dr. Hartert, who have kindly examined the bird, are of opinion that it is the young of my *P. alexanderi*. I was at first inclined to believe that this could not be the case and that it was therefore a new form, but until we have more specimens of *P. alexanderi* with which to compare it, this cannot be proved. It would certainly be very extraordinary to find two species on Cameroon Mountain. The following is a description of the bird in question.

Female. Forehead, crown, and back of the neck rufous-brown; lores, cheeks, and a narrow stripe over the eye pale chestnut; rest of upperparts dark olive washed with rufous; primaries and two middle pairs of tail-feathers dark brown; under wing-coverts white tipped with pale yellow towards the bend of the wing; throat whitish ash-colour; breast and flanks pale olive washed with rufous towards the thighs, thighs dark rufous-brown; middle of the breast and belly pale yellow; under tail-coverts pale chestnut. Bill dark horn-colour; legs dark. Culmen (exposed portion) 12 mm.; wing 51; tail 28·5; tarsus 23 mm.

This specimen, at first sight, most nearly resembles *P. helenoræ* Alexander, from which it differs in having the upperparts dark olive washed with rufous (which in the Fernando Po bird are dusky olive-brown) and in having the underparts olivaceous strongly washed with greenish-yellow instead of being grey.

It is worthy of note that according to Alexander and Seimund the sexes in *P. helenoræ* are alike in plumage. If the specimen from Cameroon Mountain described above is not a new species it must be the young of *P. alexanderi*. It has the yellowish belly characteristic of the young of *P. helenoræ*, but it certainly has not the appearance of a very young bird in other respects.

[Rare, found in the forest above Buea.—B. A.]

44. Prinia epichlora.

Burnesia epichlora Reichw. Journ. für Orn. 1892, p. 193: Buea, Cameroon Mt.

a. ♂ ad. (No. 4).	Cameroon Mt.	3. iv. 09.
b. ♂ ad. (No. 2).	„ „	6. iv. 09.
c. ♂ ad. (No. 3).	„ „	12. iv. 09.
d, *e*. ♂ ad. (Nos. 1 & 5).	„ „	24. iv. 09.
f. ♂ ad. (No. 6).	„ „	10. v. 09.

Prinia epichlora is almost exactly similar in size and colouring to *Prinia mariæ* Alexander, with the exception that the tail is less than half the length, measuring only 58 mm. instead of 129 mm. Alexander placed *P. mariæ* in a new genus, *Urolais*, which he characterised in the Bull. B. O. C. xiii. 1903, p. 35. As the length of the tail is the only character given, I prefer to unite the genus *Urolais* with *Prinia*.

A good figure of *P. mariæ* is given in the 'Ibis,' 1903, pl. viii.

[Found in the forest above 3000 ft. inhabiting the tops of the high trees.—B. A.]

45. Camaroptera griseoviridis tincta.

Syncopta tincta Cassin, Proc. Philad. Acad. 1855, p. 325: Moonda River (Gaboon).

a. ♂ ad. (No. 1). Below Buea, Cameroon Mt. 10. v. 09.

I have referred the specimen procured by Alexander to *C. g. tincta*, as I consider Cassin's name must stand for the race found on the Guinea coast from Cameroon to Gaboon. The type locality of *C. g. tincta* is the Moonda River, which is situated in French Gaboon close to the boundary of the Rio Muni Province. The typical species *Camaroptera g. griseoviridis* was described from Kordofan (Anglo-Egyptian Sudan). A review of the genus *Camaroptera* is given by Zedlitz in the Journ. für Orn. 1911, pp. 328–345, where several new forms are described. The paper should be consulted by anyone working on this difficult group, but it must be noted that the list of species and subspecies enumerated on p. 344 is not, in the light of recent discoveries, by any means complete.

46. **Laniarius atroflavus.**

Laniarius atroflavus Shelley, P. Z. S. 1887, p. 124, pl. 13: Cameroon Mt. (7300 ft.).

a–d. ♂ ♂ ♀ ♀ ad. (Nos. 1, 2, 4, 5). Cameroon Mt. 28. iii. 09.

e. ♀ ad. (No. 6). Cameroon Mt. 29. iii. 09.

f. ♂ ad. (No. 3). " " 30. iii. 09.

In this fine Yellow-breasted Boubou the sexes are alike. The bird has been obtained by collectors on several occasions in Cameroon, notably on Cameroon Mountain, where the majority of specimens were secured, and from Bamenda, and the Genderu Mountains in the interior.

[Common in the high forest.—B. A.]

47. **Dryoscopus holomelas.**

Dryoscopus holomelas Jackson, Bull. B. O. C. xvi. 1906, p. 90: Ruwenzori.

a. ♂ ad. (No. 2). Cameroon Mt. 12. iv. 09.

b. ♂ ad. (No. 1). " " 20. iv. 09.

c. ♂ imm. (No. 3). " " 16. v. 09.

This is an interesting extension of the range of this species, which was hitherto recorded only from the country surrounding the Ruwenzori Range.

[Rare; specimens 1, 2, were found above Müssarka, specimen No. 3 in the forest below Müssarka.—B. A.]

48. **Dryoscopus angolensis grisescens.**

Dryoscopus senegalensis, var. *grisescens* Reichw. Vög. Afr. ii. 1903, p. 592: Victoria (Cameroon).

Dryoscopus angolensis cameroonensis Bannerman, Bull. B. O. C. xxxv. 1915, p. 105.

a. ♂ ad. (No. 1). Above Buea, Cameroon Mt. 11. v. 09.

A single example of this interesting Shrike was obtained by Alexander on Cameroon Mountain. It was unfortunately described by me in the Bulletin of the British Ornithologists' Club as a new bird as I overlooked the fact that Reichenow had already named it. His name therefore has priority over mine, which becomes a synonym of *D. a. grisescens.*

This bird is distinguished from *D. angolensis* by having the blue of the head and nape extending on to the mantle as in *D. a. nandensis,* and in not being sharply defined from the mantle. The blue colour of the head and nape is not so intense as in *D. angolensis.* In size it is about the same.

From *D. a. nandensis* it differs in having the general colour of the upper parts greyer, particularly the mantle, wings, and tail. The head and nape are darker blue and lack the grey wash of *D. a. nandensis.* Moreover, this colour extends further on to the mantle than in either of the specimens of *D. a. nandensis* which I have examined, *i. e.* the type from Nandi and the Congo Forest bird, obtained by the Ruwenzori Expedition. The sides of the body and flanks are strongly washed with french grey, of a more intense colour than even in *D. angolensis,* which character is practically absent in *D. a. nandensis.*

In size *D. a. grisescens* is decidedly smaller than *D. a. nandensis,* the wing measuring 82 mm., as compared with 87–90 mm. in the east African race. Reichenow considered it a subspecies of *D. senegalensis,* but it has nothing to do with this species.

Culmen (exposed portion) 13 mm.; wing 82; tail 61 (from base of the middle tail-feathers); tarsus 24. Iris bright blue.

[Obtained in the forest above Buea.—B. A.]

49. Zosterops stenocricota.

Zosterops stenocricota Reichw. Journ. für Orn. 1892, p. 191: Buea (Cameroon Mt.).

a. ♂ ad. (No. 1). Cameroon Mt. 10. v. 09.
b. ♂ ad. (No. 2). „ „ 11. v. 09.
c–e. ♂ ♂ ♀ ad. (Nos. 4, 5, & 3). Cameroon Mt. 16. v. 09.

When Shelley wrote volume ii. of the 'Birds of Africa,' *Zosterops stenocricota* was known only from the type specimen, which had been procured by Dr. Preuss at Buea on the lower slopes of Cameroon Mountain. Since then it had not been obtained in that locality until Alexander procured the small series enumerated above.

Both Dr. Reichenow and Alexander referred the Olive White-eye from Fernando Po to *Z. stenocricota*, but in this they were wrong, as the two forms are perfectly distinct. I have named the Fernando Po bird *Zosterops stenocricota poensis* (*vide* Bull. B. O. C. xxxv. 1915, p. 54), but it may be as well to give a summary of the differences which distinguish these two closely allied forms.

Zosterops s. poensis differs from *Zosterops stenocricota* in its brighter, more golden-yellow and less olive upperparts; the yellow on the forehead and cheeks is deeper in colour (less canary-yellow) and extends a little further back over the forehead. Lores less distinctly black. Underparts deeper yellow throughout, strongly washed with olive-green, less distinctly on the belly. In *Z. stenocricota* the belly is pure canary-yellow, only the breast and flanks being washed with olive-green.

Size (on an average) larger. In a series of twelve birds, the bill (exposed part of culmen) varies from 10–11 mm.; the wing varies from 54–59 mm.

The measurements of the type-specimen in the British Museum: ♂ ad. Banterbari, Fernando Po, 7. iii. 04, E. Seimund coll., are:—Culmen (exposed portion) 11, wing 58, tail 37, tarsus 16·5 mm.

The principal measurements of *Zosterops stenocricota*, obtained by Alexander, are as follows:—Bill (exposed portion of culmen) 8–9, wing 53–56 mm.

Dr. Reichenow has recently (Orn. Monatsber. xviii. 1910, p. 192) described two new species of *Zosterops* from Cameroon, i. e., *Zosterops genderuensis*, from the Genderu Mountains, and *Zosterops phyllicus*, from Kufum in northern Cameroon. I have not been able to examine either of these forms.

In the same paper Dr. Reichenow describes as new *Zosterops strümpelli*, from Kangala (? Kangalua in N.E. Northern Nigeria).

The annoying way which certain ornithologists have of giving as the type-locality of a bird the name of some utterly obscure native village, in the heart of Africa, with no further details, is very greatly to be deplored. There are generally some half-dozen ways, all more or less correct, of spelling African names, and it would save hours of time and research if collectors or systematic workers would state the district in which the place they mention is situated.

[Found in the forest above Buea.—B. A.]

50. Speirops melanocephala.

Zosterops (*Speirops*) *melanocephalus* Gray, Ann. Mag. Nat. Hist. (3) vol. x. 1862, p. 444: Cameroon Mountains.

a. ♂ ad. (No. 7).	Cameroon	Peak.	2. iv. 09.
b. ♂ ad. (No. 2).	,,	,,	6. iv. 09.
c. ♀ ad. (No. 6).	,,	,,	14. iv. 09.
d. ♂ ad. (No. 5).	,,	,,	16. iv. 09.
e, f. ♂ ♀ ad. (Nos. 3 & 4).	,,	,,	19. iv. 09.
g. ♀ ad. (No. 1).	,,	,,	21. iv. 09.

This is another of the numerous species which appears to be confined to the high forests of the Cameroon Mountains. Shelley ('Birds of Africa,' ii. p. 202), on the authority of Sjöstedt, says that "the male has the undersurface paler than the female, and more white on the throat." This is not the case in the small series obtained by Alexander, the two sexes being absolutely indistinguishable.

[Not found in the forest below 8000 ft., but close to the grass-land of the Peak. Seen in small flocks.—B. A.]

51. Cinnyris oritis.

Cinnyris oritis Reichw. Journ. für Orn. 1892, p. 190: Buea, Cameroon Mt.

a. [♀] ♂ ad. (No. 1).	Cameroon	Mt.	14. iv. 09.
b. ♂ ad. (No. 2).	,,	,,	25. iv. 09.
c. d. ♂ ♂ ad. (Nos. 3, 4).	,,	,,	10. v. 09.

This is a rare Sunbird, confined to the Cameroon and perhaps the Manenguba Mountains. It is very closely allied to *Cinnyris poensis*, and when the African Sunbirds are worked out according to modern ideas, *C. oritis* will certainly become a subspecies.

It differs from *C. poensis* in having the metallic feathers of the throat and head purplish-blue instead of dull steel-green. I cannot detect any other distinction.

[Rare in the forest.—B. A.]

52. Cinnyris preussi.

Cinnyris preussi Reichw. Journ. für Orn. 1892, p. 190: Buea, Cameroon Mt.

a, b. ♂ ♀ ad. (Nos. 1, 3).	Cameroon	Mt.	3. iv. 09.
c. d. ♀ ♀ ad. (Nos. 5, 6).	,,	,,	3. iv. 09.
e. ♂ imm. (No. 2).	,,	,,	12. iv. 09.
f. ♀ (No. 4).	,,	,,	13. iv. 09.
g. ♂ ad. (No. 7).	,,	,,	20. iv. 09.
h. ♂ juv. (No. 1 *a*).	,,	,,	9. v. 09.
i. ♀ ad. (No. 2 *a*).	,,	,,	11. v. 09.

The above is a fine series showing the birds in every stage of plumage.

Preuss's Sunbird is confined to the highlands of Cameroon and Manenguba Monntains.

[Common.—B. A.]

53. Cinnyris superbus.

Certhia superba Shaw, Gen. Zool. viii. 1812, p. 193: Malimba (Portuguese Congo*).

a. ♂ ad. (No. 1). Buea, Cameroon Mt. 20. v. 09.

A single example of the Superb Sunbird was obtained on Cameroon Mountain.

54. Anthus camaroonensis.

Anthus rufulus camaroonensis Shelley, Birds of Africa, ii. 1900, p. 320: Camaroon Mt. (10,000 ft.).

Anthus camerunensis Alexander, Bull. B. O. C. xxv. 1909, p. 12: Cameroon Mt. (7000 ft.).

a–d. ♂ ♀ ad. et ♀ juv. (Nos. 3, 4, 7, 10). Cameroon Peak. 15. iv. 09.

e. ♂ ad. (No. 1) [Type of *A. camerunensis* Alex.]. Cameroon Peak. 16. iv. 09.

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* See note on p. 485.

f–i. ♂ ♀ ad. (Nos. 2, 5, 6, 9).	Cameroon Peak.	16. iv. 09.
k. ♂ ad. (No. 8).	„ „	17. iv. 09.

When, on behalf of Mr. Alexander, Mr. Ogilvie-Grant described the Cameroon Pipit as a new species he overlooked the fact that Shelley had already described the same bird from the same locality, and, by a curious coincidence, under the same name. Shelley must therefore stand as the author of the name, to which *A. camerunensis* Alex. must be added as a synonym.

As the Cameroon Pipit has already been fully described, the series before me does not call for any special remark.

[Only found on the Peak itself ; breeding.—B. A.]

55. Poliospiza burtoni.

Strobilophaga burtoni Gray, Ann. Mag. Nat. Hist. (3) vol. x. 1862, p. 445 : Cameroon Mts.

a. ♂ ad. (No. 5).	Cameroon Mt.	30. iii. 09.
b. ♂ ad. (No. 2).	„ „	6. iv. 09.
c. ♂ ad. (No. 1).	„ „	10. iv. 09.
d, e. ♂ imm., ♀ ad. (Nos. 3, 4).	„ „	13. iv. 09.
f–h. ♂ ♂ ♀ ad. (Nos. 6, 7, 8).	„ „	19. iv. 09.
i. ♀ ad. (No. 9).	„ „	22. iv. 09.

The type of *P. burtoni* is in the British Museum. It was procured by Burton in the highlands of Cameroon Mountain; later it was obtained at 9000 ft. in the same locality by Sir Harry Johnston. The present fine series shows that the sexes are alike in plumage. Considerable variation is shown in the feathers of the forehead and crown. The amount of white on the forehead is apparently a sign of age: for instance, in Nos. 1, 6, and 9 the forehead is pure white, while in No. 2 the white extends backwards to the crown, the white feathers of the crown being tipped with brown. No. 7, which appears to be fully adult, has a broad white forehead, but most of the feathers of the crown are brown, fringed with yellow.

An immature bird (No. 3) shows hardly any sign of white on the forehead, which is mottled brown.

[Only found in the high forest; seen in small parties. 7000 ft.—B. A.]

56. **Linurgus olivaceus.**

Coccothraustes olivaceus Fraser, Proc. Zool. Soc. 1842, p. 144: Fernando Po.

a. ♂ (No. 1 *a*). Cameroon Mt. 28. iii. 09.
b. ♂ (No. 2 *a*). ,, ,, 1. iv. 09.
c. ♀ (No. 2 *b*). Cameroon Peak. 17. iv. 09.
d. ♀ (No. 1 *b*). ,, ,, 20. iv. 09.

Alexander formerly separated the bird from Cameroon from *L. olivaceus* under the name *Linurgus camerunensis* (Bull. B. O. C. xiii. 1903, p. 38), but in his paper on the Birds of Fernando Po (Ibis, 1903, p. 347), he stated that the characters which he gave to the Cameroon bird were not constant, and therefore united it with *L. olivaceus*. In this decision I quite agree with him.

[Found on the Peak.—B. A.]

57. **Pyromelana xanthomelas phœnicomera.**

Euplectes phœnicomera Gray, Ann. Mag. Nat. Hist. (3) vol. x. 1862, p. 444: Cameroon.

a–f. ♂ imm. (Nos. 1, 2, 3, 4, 6, 8). Cameroon Peak. 31. iii. 09.
g. ♂ imm. (No. 7). ,, ,, 11. iv. 09.
h. ♀ ad. (No. 5). ,, ,, 16. iv. 09.

This is a local form of *P. xanthomelas*, and is apparently confined to the highest parts of the Cameroon Range.

Alexander did not obtain the adult male, but examples obtained by Sir Richard Burton and Sir Harry Johnston show that it closely resembles the male of *P. xanthomelas*. The Cameroon form is distinguished by having the bill somewhat more slender than in the typical species.

[Found in large flocks on the grass-land beyond the forest limit up to the Peak itself.—B. A.]

58. **Estrilda nonnula.**

Astrilda nonnula Hartlaub, Journ. für Orn. 1883, p. 435: Kudurma (Bahr-el-Ghazal).

a, b. ♂ ♀ ad. (Nos. 1, 2). Cameroon Mt. 27. iv. 09.

Hartlaub's Black-crowned Waxbill appears to replace *E. atricapilla* in the highlands of Cameroon. Specimens had previously been obtained from Buea by Dr. Preuss. It ranges right across Africa.

The type locality "Kudurma" is situated on the boundary of the Bahr-el-Ghazal country and the Belgian Congo.

[Found below Buea and on the Peak itself.—B. A.]

59. **Nesocharis shelleyi.** (Pl. VII. fig. 1.)

Nesocharis shelleyi Alexander, Bull. B. O. C. xiii. 1903, p. 48 [♀]: Fernando Po; Bannerman, Bull. B. O. C. xxxv. 1915, p. 106 [♂]: Cameroon Mt.

a. ♂ juv. (No. 2).	Cameroon Mt.		28. iii. 09.
b, c. ♂ ♂ ad. (Nos. 1, 4).	,,	,,	10. iv. 09.
d. ♀ ad. (No. 3).	,,	,,	10. iv. 09.

An adult male obtained at Ninong, Manenguba Mts., will be dealt with in the next paper (Part V.).

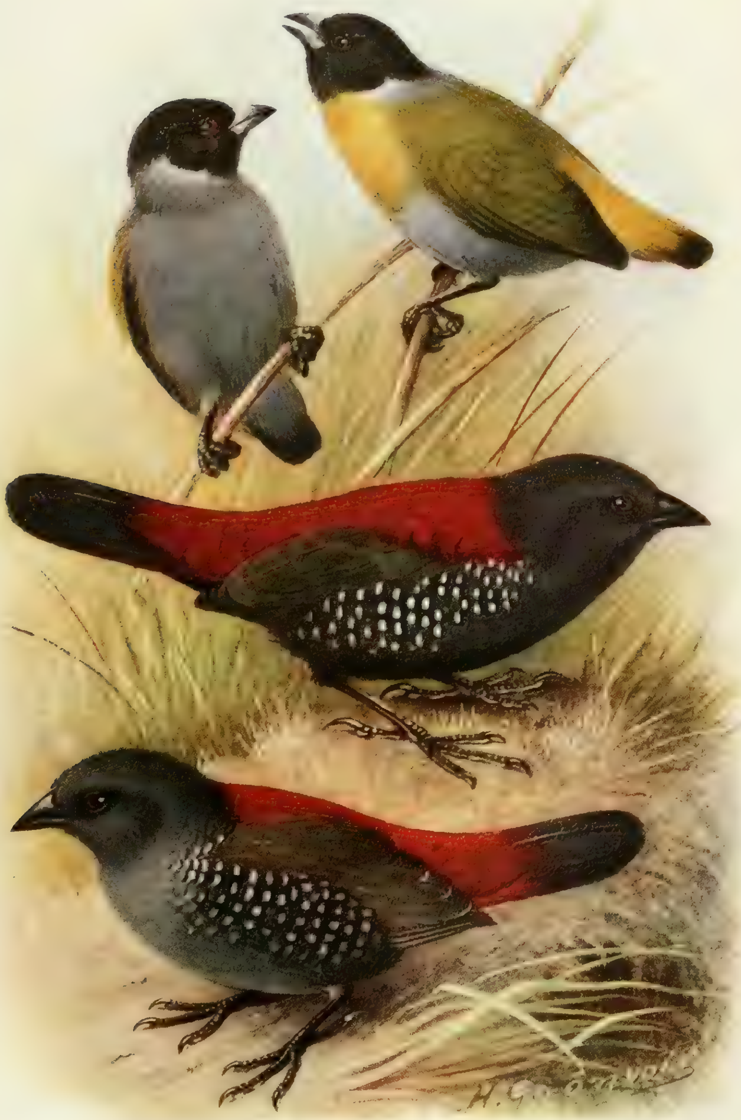
The occurrence of this rare bird on Cameroon Mountain and at Ninong is one of the most interesting discoveries of Alexander's last expedition. The type of this peculiar species was a female specimen obtained in company with another female in the highlands of Fernando Po by Alexander, who created the genus *Nesocharis* in which to place it.

The characters of the genus *Nesocharis* are given as follows:—Similar to the genus *Spermestes*, but with the bill much weaker and more compressed, tail very short and rounded, not extending beyond the outstretched feet, wing rounded.

Mr. W. R. Ogilvie-Grant has already cleared up the confusion which existed in the genus in the Report on the Ruwenzori Expedition (Trans. Zool. Soc. xix. 1910, p. 295).

The following are the three species assigned to this genus:—

1. NESOCHARIS SHELLEYI Alexander.
   Type loc., Fernando Po.
   Range. Fernando Po, Cameroon Mt., and Manenguba Mts. (Cameroon).
2. NESOCHARIS ANSORGEI (Hartert).
   Type loc., Luimi River, Toro.
   Range. Uganda.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H. Goodchild

1. NESOCHARIS SHELLEYI. ♂ and ♀.
2. LAGONOSTICTA DYBOWSKII. ♂ and ♀.

3. Nesocharis capistrata (Hartl.).
=*N. sharpii* (Nicholson).
Type loc., West Africa.
Range. Senegambia to Dahomey.

It should be remarked that the tail in *N. ansorgei* and *N. capistrata* is very much longer than that of *N. shelleyi* and extends beyond the outstretched feet.

The birds obtained by Alexander in Cameroon I have unquestionably referred to *Nesocharis shelleyi*, although that species has hitherto been represented in collections by females only.

A comparison between female examples of *N. shelleyi* and *N. ansorgei* in the British Museum and Jackson collections shows that in each species the female differs from the male bird in a similar manner, viz. :—

The female of *N. ansorgei* lacks the wide band of golden-olive which extends across the entire chest of the male, and has the underparts from the narrow white collar to the under tail-coverts uniformly grey.

The female of *N. shelleyi* resembles the female of *N. ansorgei* in having the underparts grey and in having no golden-olive on the chest. In *N. shelleyi* the female has the grey of the underparts a shade *lighter* than in the male bird, but this is not noticeable in the specimens of *N. ansorgei* which I have examined.

The male of *N. shelleyi* I have already described in the Bulletin of the British Ornithologists' Club as follows :—

Entire head and upper part of the throat jet-black; a wide grey band on the nape dividing the black head from the rest of the upperparts, which are golden-olive becoming brighter on the rump; upper tail-coverts, which extend over two-thirds of the tail, golden-yellow ; tail black. Primaries very dark brown, margined on the outer web with golden-olive ; under wing-coverts white. Lower part of the throat and breast golden-olive; belly, flanks, and under tail-coverts dark french grey, darker than in the female. Bill bluish-horn-colour.

The female of *N. shelleyi*, which has been fully described by Alexander (Ibis, 1903, p. 352), differs from the male in lacking the golden-olive on the breast and in having the underparts uniform grey throughout, considerably paler than that on the belly of the male. The upperparts are like those of the male, but the grey on the nape is paler.

A young bird (No. 2) has the golden-olive of the back much duller, and the grey band on the nape wider and extending on to the mantle. The head, cheeks, and throat are a much duller black and lack the gloss of the adult bird.

Both the adult male and female are here figured for the first time.

[Rare; found in the forest above 7000 feet.—B. A.]

60. Sycobrotus tephronotus.

Symplectes tephronotus Reichenow, Journ. für Orn. 1892, p. 184: Buea (Cameroon Mt.).

a. ♂ ad. (No. 2).	Cameroon Mt.	23. iv. 09.
b. ♂ ad. (No. 1).	,, ,,	24. iv. 09.
c. ♀ ad. (No. 3).	,, ,,	25. iv. 09.
d. ♂ ad. (No. 4).	,, ,,	12. v. 09.
e. ♀ ad. (No. 5).	,, ,,	17. v. 09.

The Cameroon Dark-backed Weaver-bird has been recorded from Buea and Yaunde, and is almost certainly synonymous with *Sycobrotus poensis* Alexander. As Alexander compared his bird from Fernando Po with *S. nandensis* Jackson instead of with *S. tephronotus*, it is not surprising that he came to the conclusion that he had discovered a new Weaver-bird.

[Found below Müssarka; not common.—B. A.]

61. Heterhyphantes insignis.

Heterhyphantes insignis Sharpe, Ibis, 1891, p. 117, pl. 6. fig. 1 (♀): Mt. Elgon.

a. ♀ imm. (No. 2).	Cameroon Peak.	2. iv. 09.
b, c. ♂ ♀ ad. (Nos. 3, 4).	Cameroon Mt.	12. iv. 09.
d. ♀ ad. (No. 1).	,, ,,	23. iv. 09.

After a very careful examination of the specimens obtained on Cameroon Mt., together with the material in the

British Museum of typical *H. insignis,* I have come to the same conclusion as Shelley and Dr. Reichenow, *i. e.*, that it is impossible to separate the Cameroon and Mount Elgon birds.

The bird from Cameroon has already received two or three names, and was first described by Dr. Reichenow from a not quite adult specimen procured by Preuss on Cameroon Mt. as *Symplectes croconotus* (J. f. O. 1892, p. 185 : Buea). Subsequently an adult was obtained by Sjöstedt and figured (Sv. Ak. Handl. Stockh. vol. xxvii. 1895, pl. ix.). According to Reichenow, *Symplestes preussi* Reichw. and *S. castanicapillus* Sjöst. are also synonyms of *H. insignis.* I have not the material to decide whether *S. castanicapillus* is synonymous, but *S. preussi* certainly is *not* and must be kept separate, as this bird does not obtain the deep chestnut cap.

The wing-measurements of *H. insignis* from east Africa and from Cameroon show very slight differences :—

E. Africa.	*Cameroon Mt.*
♂, 82–88 mm.	♂, 90 mm.
♀, 79–82 mm.	♀, 81–82 mm.

[Found in the forest above 7000 ft.; rare.—B. A.]

62. Heterhyphantes melanogaster.

Ploceus melanogaster Shelley, Proc. Zool. Soc. 1887, p. 126, pl. xiv. fig. 2 : Cameroon Mt.

a–c. ♂ ♂ ad. et ♀ juv. (Nos. 1, 5, & 6).	Cameroon Mt.	iii. 09.
d. ♂ ad. (No. 3).	„ „	29. iii. 09.
e. ♂ imm. (No. 4).	„ „	6. iv. 09.
f. ♂ ad. (No. 2).	„ „	10. iv. 09.
g. ♂ ad. (No. 7).	„ „	21. iv. 09.
h. ♀ imm. (No. 8).	„ „	22. iv. 09.

A fine series of this beautiful Weaver-finch was secured.

Cameroon Mountain is the type locality of this species, but it apparently ranges across Africa as far as Nandi. Specimens have been obtained in Fernando Po.

The female of this Weaver-bird is distinguished from the male by lacking the black throat. The bird described and figured by Shelley as an adult male is in reality a female.

An immature female (No. 8) has already assumed the yellow throat, and the underparts are mottled black and yellow.

No. 4 is a younger bird, and the underparts have not commenced to change from the olive to the black.

No. 6 is even younger than No. 4, and is practically indistinguishable from the young of *H. stephanophorus* from Ruwenzori.

The series which Alexander has obtained is particularly instructive.

[Found in the forest.—B. A.]

63. Oriolus nigripennis.

Oriolus nigripennis Verr. Journ. für Orn. 1855, p. 105: Gaboon.

a. ♂ ad. (No. 1).	Buea, Cameroon Mt.		9. v. 09.
b. ♂ ad. (No. 2).	,, ,,	,,	11. v. 09.

The Black-winged Black-headed Oriole ranges from Sierra Leone to Loango. It has been obtained more than once on Cameroon Mountain.

[Common around Buea and in the forest below Müssarka.—B. A.]

64. Dicrurus coracinus.

Dicrurus coracinus Verr. Rev. et Mag. Zool. 1851, p. 311: Gaboon.

a. ♂ (No. 1). Cameroon Mt. 12. v. 09.

A specimen of this Drongo, which ranges from Cameroon southward to Loango and eastward to the Ituri River (Shelley, vol. v. p. 177), was obtained on Cameroon Mountain by Alexander. It is an adult bird with the tail in full moult.

[Found in the forest above Buea.—B. A.]

65. Onychognathus preussi.

Onychognathus preussi Reichw. Journ. für Orn. 1892, p. 184: Buea, Cameroon Mt.

a, b. ♂ ♂ ad. et imm. (Nos. 1, 2). } Cameroon Mt. 10. v. 09.
c. ♂ ad. (No. 3). „ „ 17. v. 09.

Cameroon Mountain is the type locality of this species, which is also found in Fernando Po.

It is hard to understand how Alexander referred the specimens which he obtained in Fernando Po to *O. elgonensis* Sharpe, from British East Africa! Apart from the astonishing distribution which a jump from Mt. Elgon to the Gulf of Guinea would entail, the island bird has a much narrower and longer bill than the East African form. The quite young bird, as shown by examples in the British Museum, has a grey head and throat.

[Not common; found about Buea and in the forest below Müssarka.—B. A.]

The following is a list of species known to have been obtained on, or around the foot of, Cameroon Mountain. The limit of the spurs of Cameroon Mt. extend from Victoria to Bibundi and north to South Barombi Lake (Richards), as has been indicated by a line in the Map, Pl. VI. The majority of species are given on the authority of Dr. Reichenow †, who is responsible for the localities mentioned, except where a species is marked with an asterisk. Species obtained by Alexander are so marked, together with the locality given on his authority.

Phasianidæ.

Francolinus squamatus Cass.—Victoria.
* „ *camerunensis* Alex.—Cameroon Mt.

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† Compiled from his Report on the Ornithological results of the German Cameroon Expedition, 1908–9 (*vide* Mitt. Zool. Mus. Berlin, v. 1911, pp. 239–258).

COLUMBIDÆ.

*_Vinago calva_ (Temm.).—Buea, Mann's Spring, Cameroon Mt.
*_Columba arquatrix sjöstedti_ Reichw.—Mann's Spring, Cameroon Mt.
Streptopelia semitorquata (Rüpp.).—Victoria, Bibundi.
*_Haplopelia simplex inornata_ Reichw.—Victoria, Buea, Cameroon Mt.
Calopelia puella (Schl.).—Victoria. Cameroon Mt.
Tympanistria tympanistria (Temm.).—Bibundi, Buea.
Chalcopelia afra (Linn.).—Victoria.

RALLIDÆ.

Himantornis hæmatopus Hartl.—Victoria.
Canirallus oculeus (Hartl.).—Victoria.
Crex egregia Peters.—Bibundi.
Sarothrura elegans (Sm.).—Buea.
Gallinula angulata Sund.—Bibundi.
Podica senegalensis (Vieill.).—Victoria.
„ _camerunensis_ Sjöst.—Victoria.

LARIDÆ.

Sterna bergei Licht.—Bibundi.
„ _maxima_ Bodd.—Bibundi.
„ _hirundo_ Linn.—Victoria.
Anous stolidus (Linn.).—Victoria.
Hydrochelidon nigra (Linn.).—Bibundi, Victoria.

SCOLOPACIDÆ.

Totanus nebularius (Gunn.).—Victoria.
„ _totanus_ (Linn.).—Bibundi.
„ _glareola_ (Linn.).—Bibundi.

ARDEIDÆ.

Tigrornis leucolopha Jard.—Victoria.
Butorides atricapillus (Afz.).—Victoria.
Ardea purpurea Linn.—Bibundi.
Lepterodius gularis (Bosc).—Victoria.

FALCONIDÆ.

Polyboroides typicus Sm.—Victoria, Mann's Spring.
Asturinula monogrammica (Temm.).—Victoria.
Astur castanilius (Bonap.).—Victoria, Cameroon Mt.
Accipiter sharpei Reichw.—Cameroon Mt.
Urotriorchis macrurus (Hartl.).—Victoria.
Dryotriorchis batesi Sharpe.—Victoria.
Lophoaëtus occipitalis (Daud.).—Cameroon Mt.
Gypohierax angolensis (Gmel.).—Victoria.
Haliaëtus vocifer (Daud.).—Cameroon Mt.
*_Milvus ægyptius parasitus_ (Daud.).—Mann's Spring.
Pernis apivorus (Linn.).—Victoria.
Falco cuvieri Sm.—Victoria.

STRIGIDÆ.

Bubo poensis Fras.—Victoria.
,, *letti* (Bütt.).—Victoria.
**Strix nuchale* (Sharpe).—Victoria, Buea.
Glaucidium sjöstedti Reichw.—Victoria, Cameroon Mt.
Flammea maculata (Brehm).—Victoria, Mann's Spring.

PSITTACIDÆ.

Psittacus erithacus Linn.—Victoria.
Poicephalus aubryanus Souancé.—Mann's Spring.

ALCEDINIDÆ.

Halcyon forbesi Sharpe.—Victoria, Buea.
,, *senegalensis fuscopileatus* Reichw.—Victoria, Cameroon Mt.
,, ,, *cyanoleucus* (Vieill.).—Victoria, Cameroon Mt.†
Ispidina picta (Bodd.).—Victoria, Cameroon Mt.
Corythornis cyanostigma (Rüpp.).—Victoria.
Alcedo güntheri Sharpe.—Cameroon Mt.
Ceryle rudis (Linn.).—Cameroon Mt.

MEROPIDÆ.

Melittophagus gularis australis Reichw.—Victoria.
Merops albicollis Vieill.—Victoria.

BUCEROTIDÆ.

Ceratogymna elata (Temm.).—Bibundi, Victoria.
,, *atrata* (Temm.).—Victoria.
Bycanistes albotibialis (Reichw.).—Victoria.
,, *sharpei* (Elliot).—Victoria.
Lophoceros fasciatus (Shaw).—Victoria.
,, *camurus* (Cass.).—Victoria, Cameroon Mt.
Ortholophus cassini Finsch.—Victoria.

MACROPTERYGIDÆ.

Tachornis brachypterus Reichw.—Bibundi.

COLIIDÆ.

**Colius striatus nigricollis* Vieill.—Victoria, Buea, Cameroon Mt.

TROGONIDÆ.

Hapaloderma narina æquatoriale Sharpe.—Victoria.
* ,, *vittatum camerunense* Reichw.—Buea.

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† Doubtfully distinct from the foregoing.

CUCULIDÆ.

**Centropus monachus fischeri* Reichw.—Bibundi, Victoria, Buea.
,, *leucogaster* (Leach).—Victoria.
Ceuthmochares aereus (Vieill.).—Victoria, Cameroon Mt.
**Cuculus solitarius* Steph.—Cameroon Mt.
,, *gabonensis* Lafr.—Victoria, Buea.
Chrysococcyx cupreus (Bodd.).—Victoria, Buea.
,, *klaasi* (Steph.).—Victoria, Buea.
,, *smaragdineus* (Sw.).—Bibundi, Victoria, Cameroon Mt.

MUSOPHAGIDÆ.

**Corythæola cristata* (Vieill.).—Victoria, Cameroon Mt.
**Turacus meriani* Rüpp.—Victoria, Buea, Mann's Spring, Cameroon Mt.
* ,, *persa* (Linn.).—Victoria, Cameroon Mt., Buea.

CAPITONIDÆ.

Lybius bidentatus (Shaw).—Victoria, Buea.
Tricholæma flavipunctatum Verr.—Victoria, Cameroon Mt.
**Gymnobucco calvus* (Lafr.).—Victoria, Buea, Cameroon Mt.
,, *peli* Hartl.—Cameroon Mt.
Buccanodon duchaillui (Cass.).—Victoria, Cameroon Mt.
Barbatula stellata (Jard. & Fras.).—Victoria.
* ,, *leucolaima* Verr.—Buea.
,, *coryphæa* Reichw.—Buea.
Trachylæmus purpuratus (Verr.).—Victoria, Buea, Mann's Spring.

INDICATORIDÆ.

**Indicator conirostris* (Cass.).—Cameroon Mt.
**Prodotiscus insignis* (Cass.).—Cameroon Mt.

PICIDÆ.

Dendromus nivosus Swains.—Victoria, Cameroon Mt.
,, *permistus* (Reichw.).—Victoria, Cameroon Mt.
Mesopicus pyrrhogaster (Malh.).—Victoria, Mann's Spring.
* ,, *johnstoni* (Shell.).—Buea, Cameroon Mt.
,, *ellioti* (Cass.).—Victoria.
,, *xantholophus* (Harg.).—Victoria.
**Dendropicus lafresnayei* Malh.—Bibundi, Buea.
,, *gabonensis* (Verr.).—Victoria.
**Campothera tullbergi* Sjöst.—Cameroon Mt.

PITTIDÆ.

Pitta angolensis Vieill.—Victoria.

HIRUNDINIDÆ.

Riparia cincta (Bodd.).—Victoria.
Psalidoprocne nitens (Cass.).—Cameroon Mt.
* ,, *fuliginosa* Shell.—Bibundi, Victoria, Buea, Mann's Spring, Cameroon Mt.
,, *chalybea* Reichw.—Victoria.

MUSCICAPIDÆ.

Fraseria ocreata (Strickl.).—Victoria.
,, *cinerascens* Hartl.—Victoria.
**Alseonax murinus obscurus* Sjöst.—Mann's Spring, Buea, Cameroon Mt.
Pedilorhynchus comitatus (Cass.).—Victoria, Buea.
Artomyias fuliginosa Verr.—Victoria.
Stizorhina fraseri (Strickl.).—Victoria.
,, *zenkeri* (Reichw.).—Victoria.
Megabias atrialatus (Cass.).—Victoria, Cameroon Mt.
**Platystira cyanea* (Müll.).—Victoria, Bibundi, Cameroon Mt.
Diaphorophyia castanea (Fras.).—Victoria, Cameroon Mt.
**Trochocercus albiventris* Sjöst.—Mann's Spring, Cameroon Mt.
**Elminia teresita* Antinori.—Buea.
Terpsiphone tricolor (Fras.).—Ekundu, Victoria, Cameroon Mt.
,, *viridis* (Müll.).—Victoria.
,, *rufocinerea* (Cab.).—Victoria, Cameroon Mt.
**Smithornis camerunensis* Sharpe.—Cameroon Mt.
**Cryptolopha camerunensis* Alex.—Cameroon Mt.

CAMPEPHAGIDÆ.

**Graucalus cæsius preussi* Reichw.—Victoria, Buea, Cameroon Mt.
,, *azurea* (Cass.).—Mann's Spring.
Campephaga quiscalina Finsch.—Victoria.

PYCNONOTIDÆ.

Criniger chloronotus (Cass.).—Victoria, Cameroon Mt.
,, *calurus* (Cass.).—Bibundi, Victoria, Cameroon Mt.
Bleda notata (Cass.).—Victoria.
,, *syndactyla* (Swains.).—Victoria.
* ,, *poliocephala* (Reichw.).—Buea, Mann's Spring, Cameroon Mt.
* ,, *tephrolæma* (Gray).—Buea, Mann's Spring.
,, *flavicollis flavigula* (Cab.).—Bibundi.
,, *leucophrys* (Cass.).—Victoria, Cameroon Mt.
,, *icterina* (Bonap.).—Victoria, Cameroon Mt.
* ,, *poensis* (Alexander).—Cameroon Mt.
Andropadus montanus Reichw.—Buea.
,, *gracilirostris* Strickl.—Victoria.
,, *virens* Cass.—Victoria, Buea.
,, *curvirostris* Cass.—Victoria.
Ixonotus guttatus Verr.—Victoria, Cameroon Mt.
Pycnonotus barbatus gabonensis Sharpe.—Victoria.

TURDIDÆ.

*_Turdus crossleyi_ Sharpe.—Cameroon Mt.
*,, _nigrilorum_ Reichw.—Buea, Cameroon Mt.
,, _saturatus_ Cab.—Victoria, Mann's Spring, Buea.
*_Saxicola salax pallidigula_ (Reichw.)—Buea, Cameroon Mt.
*_Turdinus monachus_ Reichw.—Mann's Spring, Buea, Cameroon Mt.
Alethe poliocephala (Bonap.).—Victoria, Buea.
,, _castanea_ (Cass.).—Cameroon Mt.
*,, _poliothorax_ Reichw.—Cameroon Mt.
*_Cossypha isabellæ_ Gray.—Mann's Spring, Buea, Cameroon Mt.
,, _periculosa_ Sharpe.—Victoria, Buea.
*_Bradypterus camerunensis_ Alexander.—Cameroon Mt.
*_Calamocichla plebeia_ Reichw.—Buea.
Neocossyphus poensis (Strickl.).—Ekundu, Victoria, Cameroon Mt.

SYLVIIDÆ.

*_Cisticola rufopileata_ Reichw.—Bibundi, Cameroon Mt., Buea.
*,, _discolor_ Sjöst.—Cameroon Mt.
Prinia bairdi (Cass.).—Buea.
*,, _epichlora_ (Reichw.).—Buea, Cameroon Mt.
Apalis sclateri Alex.—Mann's Spring.
*_Euprinodes cinereus_ Sharpe.—Cameroon Mt.
Eremomela badiceps (Fras.).—Bibundi.
*_Camaroptera griseoviridis tincta_ (Cass.).—Buea.
*_Poliolais alexanderi_ Bannerman.—Cameroon Mt.
*_Poliolais_ sp.—Cameroon Mt.
Phylloscopus trochilus (Linn.).—Mann's Spring.

LANIIDÆ.

Nicator chloris (Less.)—Victoria, Cameroon Mt.
Chlorophoneus melamprosopus (Reichw.).—Victoria, Cameroon Mt.
,, _preussi_ (Neum.).—Victoria.
Laniarius leucorhynchus (Hartl.).—Victoria, Buea.
,, _lühderi_ (Reichw.).—Victoria.
*,, _atroflavus_ Shell.—Buea, Mann's Spring, Cameroon Mt.
Dryoscopus angolensis Hartl.—Victoria.
*,, _a. grisescens_ Reichw.—Victoria, Buea.
*,, _holomelas_ Jackson.—Cameroon Mt.
,, _senegalensis_ (Hartl.).—Victoria.
Chaunonotus melanoleucus (Verr.).—Victoria.
Malaconotus gladiator (Reichw.).—Buea.
,, _olivaceus_ (Vieill.).—Buea.
,, _gabonensis_ Shell.—Victoria, Buea.
Lanius mackinnoni Sharpe.—Buea.

PARIDÆ.

Pholidornis rushiæ (Cass.).—Bibundi.

ZOSTEROPIDÆ.

**Zosterops stenocricota* Reichw. Buea, Cameroon Mt.
**Speirops melanocephala* (Gray).—Mann's Spring, Cameroon Peak.

NECTARINIIDÆ.

Anthreptes gabonicus (Hartl.).—Victoria.
,, *fraseri* Jard.—Victoria.
,, *hypodilus* (Jard.).—Buea.
,, *tephrolæma* (Jard.).—Victoria, Buea.
,, *aurantium* Verr.—Victoria.
Chalcomitra obscura (Jard.).—Bibundi.
,, *verticalis* (Lath.).—Victoria, Buea.
**Cinnyris oritis* Reichw.—Buea.
,, *cyanolæma* (Jard.).—Victoria.
,, *fuliginosus* (Shaw).—Victoria, Cameroon Mt.
,, *angolensis* (Less.).—Victoria, Buea.
,, *cupreus* (Shaw).—Buea.
* ,, *superbus* (Shaw).—Bibundi, Victoria, Buea.
,, *lühderi* Reichw.—Bibundi, Buea.
* ,, *preussi* Reichw.—Bibundi, Cameroon Mt.
Cyanomitra reichenbachi (Hartl.).—Bibundi.

MOTACILLIDÆ.

Motacilla longicauda Rüpp.—Victoria.
**Anthus camaroonensis* Shell.—Cameroon Mt.
,, *sordidus*, Rüpp.—Mann's Spring.

FRINGILLIDÆ.

**Poliospiza burtoni* (Gray).—Mann's Spring, Cameroon Mt.
**Linurgus olivaceus* (Fras.).—Bibundi, Buea, Victoria, Cameroon Mt.

PLOCEIDÆ.

Malimbus nitens (Gray).—Victoria, Cameroon Mt.
,, *rubricollis* (Swains.).—Victoria.
,, *malimbicus* (Daud.).—Victoria, Cameroon Mt.
,, *scutatus scutopartitus* Reichw.—Victoria, Cameroon Mt.
**Sycobrotus tephronotus* (Reichw.).—Buea, Cameroon Mt.
**Heterhyphantes insignis* Sharpe.—Cameroon Mt.
* ,, *melanogaster* (Shell.).—Buea, Mann's Spring, Cameroon Mt.
Hyphanturgus brachypterus Swains.—Victoria, Bibundi, Buea.
Melanopteryx nigerrimus Vieill.—Victoria, Bibundi, Buea.
Hyphantornis cucullatus (Müll.).—Victoria, Buea.
,, *monachus* (Sharpe).—Bibundi.
Spermospiza guttata (Vieill.).—Victoria, Bibundi.
Quelea erythrops (Hartl.).—Bibundi.
**Pyromelana xanthomelas phœnicomera* (Gray).—Buea, Mann's Spring, Cameroon Mt.

Spermestes punctata Heugl.—Bibundi.
,, *poensis* (Fras.).—Buea.
Nigrita brunnescens Reichw.—Victoria, Buea.
,, *fusconota* Fras.—Buea.
,, *luteifrons* Verr.—Victoria, Buea.
,, *canicapilla* (Strickl.).—Victoria, Bibundi, Buea.
Cryptospiza reichenowi (Hartl.).—Victoria, Buea.
**Nesocharis shelleyi* Alexander.—Cameroon Mt.
**Estrilda nonnula* Hartl.—Bibundi, Buea, Cameroon Mt.
Vidua serena (Linn.).—Bibundi.

ORIOLIDÆ.

Oriolus lætior Sharpe.—Victoria, Cameroon Mt.
* ,, *nigripennis* Verr.—Buea, Mann's Spring.

DICRURIDÆ.

**Dicrurus coracinus* Verr.—Victoria, Cameroon Mt.
,, *atripennis* Swains.—Victoria.

STURNIDÆ.

Lamprocolius purpureiceps Verr.—Victoria, Cameroon Mt.
,, *splendidus* (Vieill.).—Victoria.
Onychognathus hartlaubi (Gray).—Victoria.
* ,, *preussi* Reichw.—Buea, Mann's Spring, Cameroon Mt.
Pæoptera lugubris Bonap.—Victoria.

CORVIDÆ.

Corvus scapulatus Daud.—Victoria.
Picathartes oreas Reichw.—Victoria.

XXV.—*Notes on some Waders.*

By ERNST HARTERT, M.B.O.U., and ANNIE C. JACKSON, H.M.B.O.U.

(Text-figure 7.)

i. *On the genera* CHARADRIUS, ÆGIALITIS, *and* EUDROMIAS.

WE cannot find any satisfactory characters by which to separate the genera *Charadrius*, *Ægialitis*, and *Eudromias*. In the new B.O.U. List of British Birds all three have been kept separate, in the Hand-list of British Birds all were united. Blanford (B. India, iv. pp. 236, 237) separated *Ægialitis* from *Charadrius*, but united *Eudromias* with the latter! He says: "It appears best to class together the Sand-Plovers, Dotterels, and Ringed Plovers," and admits that: "Structurally there is no difference between the present genus (i. e. *Ægialitis*) and *Charadrius*. The only distinction, except in size, is in plumage," by which he means coloration. We do not see how size can decide the question, as the Dotterel is just about halfway in size between the Golden and Ringed Plovers, and we cannot admit the different coloration as of taxonomic value, least of all if the Dotterel is united with the Ringed Plovers!

ii. *On* CHARADRIUS ALEXANDRINUS.

In the Hand-list of British Birds, p. 167, the distribution of *C. alexandrinus alexandrinus*, during the breeding-season, has been given as "Europe from south Sweden to Mediterranean and north Africa, Madeira, Canary, Cape Verde Islands and Azores, apparently to east Siberia and Corea," and it has been said that it is replaced by allied forms in China, America, and "apparently also Ceylon."

In the B. O. U. List (p. 245) apparently only one form is recognised, as the distribution covers the whole area, including China and Ceylon, though it is added: "Various races have been recognised."

We find the view of the Hand-list correct, and Seebohm in his 'Geogr. Distr. of the Charadriidæ' has first correctly separated the races, which are as follows:—

1. **Charadrius alexandrinus alexandrinus** L.

Charadrius alexandrinus Linnæus, Syst. Nat. ed. x. i. p. 150 (1758—Egypt).

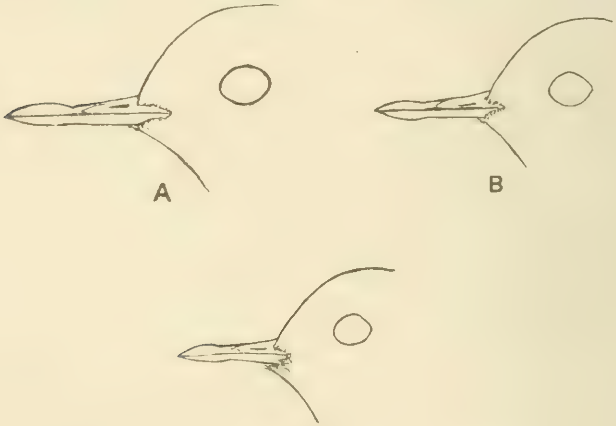
Charadrius cantianus Latham, Ind. Orn. Suppl. p. lxvi (1801—Kent).

For further synonyms see Cat. B. Brit. Mus. xxiv. pp. 275–276.

Wing in both sexes about 106–115 and not rarely even 118 and (once) 119 mm. Bill generally about 14–15 mm., hardly ever longer.

Breeds from the southern coasts of England, south Sweden, Denmark and Rügen, to the Mediterranean, Canary Islands, Madeira, Cape Verde Islands and Azores, in North Africa as far as the salt-swamps of the northern Sahara (Bledet-Ahmar, south of Touggourt), absent from north Russia, but throughout central Asia to Korea.—On migration to tropical Africa and Cape Colony, in India, as far as Ceylon, Japan, southern China and Formosa, the Natunas islands, the Malay Peninsula, and Borneo.

Text-figure 7.



A. *Charadrius alexandrinus dealbatus.*
B. *C. a. alexandrinus.* C. *C. a. seebohmi.*

2. **Charadrius alexandrinus dealbatus** Swinhoe.

Ægialites dealbatus Swinhoe, Proc. Zool. Soc. London, 1870, p. 138 ("south coast of China, including Formosa and Hainan").

Differs from *C. a. alexandrinus* in its considerably stouter and longer bill. According to Swinhoe and Seebohm the legs are of a pale flesh-colour, but the labels written by Alan Owston's Japanese collectors do not bear this out, as they describe the legs and feet as blackish slate and mouse-grey, *i. e.*, the same as in the European form. Robert Hall says: "Pale bluish slate, front of tarsus pale fleshy cream-colour."

Wing about 109–115, exceptionally as long as 123 mm. Bill generally 16–17·5 mm.

This form is resident in south China, Hainan, Formosa, the Riukiu (Loo-Choo) Islands, and Japan, at least as far north as Yokohama, where in winter *C. a. alexandrinus* occurs as well. In the British Museum is a specimen from Amherst in Burma; also a female from Zaidam in central Asia belongs to this race.

Sharpe (Cat. B. Brit. Mus. xxiv. p. 279) refused to recognise this form, because some Chinese birds had as dark legs as European ones, but he overlooked the one distinguishing character, i.e., the huge bill, and apparently also the fact that *C. a. alexandrinus* migrates in winter into the area of *C. a. dealbatus.*

3. **Charadrius alexandrinus seebohmi,** nom. nov.

Charadrius cantianus minutus (nec *Charadrius minutus* Pallas, 1827 !) Seebohm, Geogr. Distrib. Charadriidæ, p. 169 (1887—"Southern shores of the Red Sea, and island of Ceylon").

Considerably smaller than *C. a. alexandrinus* and *C. a. dealbatus.* Wing only 101–105, bill 12–13·5 mm. Unfortunately Seebohm's name is antedated by Pallas' *Charadrius minutus*, and we therefore propose a new name for the smallest race of the Kentish Plover, the type-specimen being an adult male in the Tring Museum from Aripo in north Ceylon, collected March 4, 1869, by E. Holdsworth.

The distribution of this race is not yet clear to us. It is resident in Ceylon, where it nests. Besides Ceylonese birds, some from Massaua (Red Sea) and Somaliland in the British Museum undoubtedly belong to the small race. A female from Sokotra, considered by Sharpe to belong to it (Cat. B. Brit. Mus. xxiv. p. 282), appears to be doubtful (wing 108), and we do not admit the west African specimen to be of this race.

4. **Charadrius alexandrinus nivosus** (Cass.).

Ægialitis nivosus Cassin, Baird's B. N. America, p. 696 (1858—California).

This form appears to agree in all essential characters with *C. alexandrinus,* except in the complete absence of the black loral line. We agree therefore with Seebohm in treating it as a subspecies of the latter.

It inhabits the western United States of North America and migrates far south into South America.

iii. *What is* "ÆGIALITIS HOMEYERI" Brehm?

In 1855, Vogelfang, p. 283, C. L. Brehm described *A. homeyeri,* saying that it had a long black beak, the size of *A. hiaticula,* the markings of *A. dubius,* but a greyish rust-yellow crown. The description has not been quoted in Cat. B. Brit. Mus xxiv. p. 259, but only the nomen nudum in the Naumannia, 1855, with a query. Examining the type of *A. homeyeri,* now in the Tring Museum, we find it is a *Charadrius hiaticula* with the head of a *C. alexandrinus* skilfully sown on. It is labelled as coming from the island of Rügen in the Baltic.

iv. *On* CHARADRIUS COLLARIS.

In looking over the series of this species in the Tring Museum, we were struck by the different sizes of the various specimens, and it became clear that all the northern examples, *i.e.,* from Central America, Bonaire Island, Venezuela, British Guiana, and the Rio Madeira in Brazil, formed the small race, while those from southern Brazil to the Argentine Republic were considerably larger. Therefore the two races should be separated.

The larger race was first named by Vieillot in 1817 from Azara, who described it from Paraguay. *C. azaræ* Temm. is based on the same description and, therefore, a pure synonym. *C. larvatus* appears to be also a synonym, being based on a specimen brought home by Delalande, who seems to have collected in south-east Brazil only; moreover, it is said to be of the size of the Little Ringed Plover, which applies certainly better to the big race than the small one. The first description of the small form is that by Cabanis, who in 1872 named it *Ægialitis gracilis.* The northern form must therefore be called *Charadrius collaris gracilis*, and the synonymy of the two forms is as follows:—

1. **Charadrius collaris collaris** Vieill.

Charadrius collaris Vieillot, Nouv. Dict. d'Hist. Nat. xxvii. p. 136 (1817—Based on the "Mbatuitui collar negro" of Azara from Paraguay).

Charadrius azarai Temminck, Pl. Col. 184 (1823—based on the same bird, no. 392 of Azara from Paraguay).

Charadrius larvatus Lesson, Man. d'Orn. ii. p. 318 (1828—Brazil, Delalande coll.).

The wing measures 102 (once 101) to 105 mm.

This form inhabits southern South America from Argentina to Paraguay, also the province of Rio de Janeiro (Marambaya, Natterer coll. in the British Museum) and the Rio Pilcomayo, and extends to Cosnipata in Peru.

2. **Charadrius collaris gracilis** (Cab.).

Ægialitis gracilis Cabanis, Journ. f. Orn. 1872, p. 158 (Tehuantepec).

Wing: 87·5–97 mm.

Inhabits Central America and northern South America, where the two forms appear to overlap, though further evidence is required whether this takes place in the breeding-season. There are, however, in the British Museum specimens from as far south as Iquitos and Chamicuros in Peru, and one from Cosnipata appears also to belong to it, others from Rio Grande do Sul in southern Brazil, and from Matto Grosso. In the whole of north Brazil only the small race occurs, as well as in Guiana.

v. *On* CHARADRIUS DUBIUS.

As in the case of *C. alexandrinus* there are several races, which cannot be overlooked, but they are closely allied and obscured in collections by the northern migrants, which often stray into the areas inhabited by their tropical allies. While the former ones are mighty wanderers, the latter are resident, as is evidently the case with *C. alexandrinus*, and indeed most tropical birds.

The small "tropical" race (not a good name, because *C. dubius dubius* is also tropical) is very close to *C. dubius curonicus* and not easy to recognise in skins, though apparently better in life, but the large-billed *C. d. dubius* is easily separable from *C. dubius curonicus,* though it seems that nobody has called attention to it.

1. **Charadrius dubius dubius** Scop.

Petit Pluvier à collier de l'Isle de Luçon Sonnerat, Voyage Nouv. Guin. p. 84, pl. 46 (1776—Luzon. The plate clearly shows the large bill).

Charadrius (*dubius*) Scopoli, Del. Faunæ et Floræ Insubr. ii. p. 93 (1786—*ex* Sonnerat, l. c., Luzon).

Charadrius philippinus Latham, Index Orn. ii. p. 745 (1790—*ex* Sonnerat, l. c., Philippine Is.).

Recognisable at a glance, when series are compared, by the long and strong bill. The culmen, from the end of the feathering, measures 14–15·6, the wing 109–116 and even 118 mm.

This race breeds and is resident on the Philippine Islands, in Hainan, Formosa, and apparently parts of south China, and it occurs sometimes on the Japanese Islands.

2. **Charadrius dubius curonicus** Gm.

Ein Regenpfeifer Beseke, Schriften d. Ges. naturf. Freunde Berlin, vii. p. 463 (1776—Kurland = "Courland"; the description is reproduced in Beseke, Vögel Kurlands, p. 66, 1792).

Charadrius curonicus Gmelin, Syst. Nat. i. pt. 2, p. 692 (1789—"Habitat in Curonia." *Ex* Beseke, l. c.).

Charadrius minor Wolf & Meyer, Vög. Deutschl. Heft xv. (1805—New name for *C. curonicus* and *fluviatilis* ; *cf.* Meyer & Wolf, Taschenb. d. deutsch. Vogelk. p. 324).

Charadrius fluviatilis Bechstein, Gemeinn. Naturg. Deutschl. iv. p. 422 (1809—Also new name for *C. curonicus*).

Charadrius minutus Pallas, Zoogr. Rosso-Asiat. ii. p. 145 (1827—"In aquosis deserti Barabensis rarius occurrit," *i. e.,* Barabinski Steppes, Tomsk Gouvernement, W. Siberia).

Charadrius pusillus Horsfield, Trans. Linn. Soc. London, xiii. p. 187 (1821—Java. The type, a female, is evidently a migrant of the palæarctic race).

? *Charadrius hiaticuloides* Franklin, Proc. Zool. Soc. London, 1831, p. 125 (Ganges).

Charadrius intermedius Ménétriés, Cat. Rais. Caucasus, p. 53 (1832—Lenkoran).

Charadrius zonatus Swainson, B. W. Afr. ii. p. 235, pl. xxv. (1837—Senegal or Gambia).

? *Hiaticula simplex* Lichtenstein, Nomencl. Av. Mus. Berolin. p. 94 (1854—E. India ! Nomen nudum !).

(For other synonyms see Cat. B. Brit. Mus. xxiv. pp. 266, 267.)

Quite like *A. d. dubius*, but the bill smaller, less powerful, about 11·8–14·5 mm.; wing 111–119 and even 123 mm.

Nesting in the greater portion of Europe, in north-west Africa north of the Sahara, on the North Atlantic Islands, and through northern and central Asia apparently to east Siberia and Japan. Winters in Africa, India, and on the Sunda Islands.

3. **Charadrius dubius jerdoni** (Legge).

? *Charadrius hiaticuloides* Franklin, Proc. Zool. Soc. London, 1831, p. 125 (Ganges).

? *Hiaticula simplex* Lichtenstein, Nomencl. Av. Mus. Berolin. p. 94 (1854—E. India ! Nomen nudum !)

Ægialitis jerdoni Legge, Proc. Zool. Soc. London, 1880, p. 39 (Ceylon and Central India).

This form, though recognised by Legge, Seebohm, Salvadori, Hume, and others, is not easy to separate from *C. d. curonicus*, but it cannot be ignored. It is generally smaller, the wings measuring from 103–112 and even 114 or 115 mm., the black frontal line is narrower and sometimes quite absent, and—according to most authors—the base of the lower mandible, which is only pale brown or yellow in *C. d. curonicus*, is invariably bright yellow in adult birds; it is also said that the eyelid is more developed and of a bright yellow. The distribution is not easy to define, but it seems that this form inhabits India and is also found in Borneo and New Guinea. Specimens with larger dimensions from India are apparently migrants from the north, but in view of the great individual variation in size of these Little Plovers, one cannot always be sure about single winter birds from tropical India.

vi. *On* TRINGA OCHROPUS.

It has recently been suggested that the eastern and western forms of the Green Sandpiper are separable, the latter being lighter and smaller. We cannot confirm this; neither can we see the slightest difference in colour, nor is the supposed eastern form larger; on the contrary, we find more large specimens among western birds—apart from a giant from the Amambara Creek, Niger, W. Africa—than among the eastern ones, but the majority show the same dimensions.

We must therefore regard *Tringa ochropus assami* Mathews (Austral. Av. Rec. i. p. 188, 1913, Assam, and B. Austr. iii. p. 203) as a synonym of *T. ochropus*.

XXVI.—*Notes on the Ornithology of the Matopo District, Southern Rhodesia.* Part II.* By L. BERESFORD MOURITZ, M.B.O.U., M.S.A.O.U.

(Text-figure 8.)

118. ‡ **Riparia cincta.** Banded Sand-Martin.

An uncommon summer visitor, and very local in its distribution. I first met with this Sand-Martin in the district on November 30, 1910, when four or five were flitting about some old shafts and trenches between the Northern Star and Kimono Mines. In 1912 I saw one, flying in company with two Rufous-breasted Swallows, close to the Terminus Hotel, on January 21, and again met with it in this locality on March 10, whilst at the end of January I met with the species again on Lucydale farm. These latter birds I had under observation throughout February and March, and have no doubt they nested in the vicinity. One was invariably to be found perched on a bare thorn-bush close to a sandy patch, where there were innumerable springhaas' and ant-bears' holes. I think this bird must have been a male watching over his sitting mate, but in spite of very careful searchings and continual watching, the bird refused to give away the site of its nest. It would simply flit lazily about, to and fro, uttering very occasionally a soft "zwit" and returning promptly each time to its perch upon my retreat. The latest date which I have of this migrant's occurrence is April 27, when I noticed a small party, including two or three *Hirundo puella,* flying in a north-westerly direction at sunset.

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* For Part I. see 'Ibis,' 1915, pp. 185-216.

119. **Riparia fuligula anderssoni.** Damaraland Rock-Martin.

Ptyonoprogne anderssoni (Sharpe & Wyatt); Scl. ii. p. 288.

Within the hills, common in certain localities and often breeding in large colonies; also sometimes found in lesser numbers in more or less isolated spots. Only occurring to my knowledge at Matjanyoni and the contiguous kopjes on the surrounding veld. Whether it is a resident with us or not I am unable to say, but in 1912 I met with it from February to August; after the middle of June, however, their numbers appeared to be greatly diminished. At any rate, there is little doubt that it is subject to considerable local movement. The birds nesting beyond the hills proper (*e.g.*, the colony on La Concord farm) probably leave their exposed nesting localities to winter in the more sheltered valleys within the hills. According to my observations, by far the majority of the birds which nested around Matjanyoni left on or about March 24; although for two months afterwards there were a few stragglers there raising belated broods, but my notes from then until August are confined to the hills proper. Eventually, this Rock-Martin will probably prove to be found throughout the year in the

Matopos, as was noted to be the case in Damaraland by Andersson. A breeding female shot on the 7th of February was infested with small ticks on the crown, and, although referable to the present species (the underside immediately distinguishing it from the southern darker form), it differed materially from Sclater's description. The upperside was hardly "pale mouse-colour," but intermediate in this respect between *R. fuligula* and *R. anderssoni.* Another important difference was in the tail; the four centre rectrices and the two outermost were immaculate, leaving only six feathers with white on the inner webs. The under tail-coverts were darker than the breast and edged with greyish, and the longest reached within 3 mm. of the end of the central rectrices. Upper mandible black; lower black also, but lighter at the base; iris brown; legs and feet light brown. This specimen measured 121·5 mm. in length; wing 111·5; tail 50·25; tarsus 11·5, and culmen 7.

In the case of the nesting colony, on Matjanyoni kopje, visited in February, the nests seemed to be all placed in precipitous and inaccessible places. In one case they were situated on ledges of rock inside a large cavity; and in another, on a ledge beneath a huge mass of overhanging granite and above a steep wall of rock, whilst there were also nests in smaller cavities on the other side of the kopje. Nesting colonies within the hills are situated on Makalanyoni, Mshingili, Pomomwi, Inengwe Ranges, etc. During the nesting-season these Martins seem to hang around their chosen spots very much, and may be seen flying round and round, up and down and over the kopje (in well-defined routes), snapping up insect-life on their way; or they may be observed flitting lazily about higher in the air over the top of the kopje; at other times they love to rest secure in some small irregularity of surface on the faces of the larger masses of granite, basking in the rays of the rising or setting sun—every now and again taking a short circuitous flight only to return to the same spot. Later in the year this Martin frequents the streams more, and may often be noted over reaped and other lands.

120. ‡ **Hirundo griseopyga.** Grey-rumped Swallow.

I observed a pair of these rare Swallows on January 25, 1912, on Lucydale farm.

121. ‡ **Hirundo dimidiata.** Pearl-breasted Swallow.

The little Pearl-breasted Swallow is also rare; but I noticed it at Fortusher in 1908, at the World's View in June 1911, and twice in August 1912, on Mineral King farm and close to Bedza.

122. ‡ **Hirundo rustica.** European Swallow.

Sind. "nkonjani," a term also applicable to Bee-eaters, as well as other species of Swallows.

A very common summer visitor, which in 1912 occurred as late as April 24, when a small party journeying northwards passed over Lucydale. In February, there were movements going on amongst our Swallows. On the morning of the 7th, I noticed scores at dawn all perched on mealie stalks in an old cultivation, and, from their lassitude, evidently travellers—our full complement of birds being scattered about the country as usual. On the 21st, I noticed again several small parties of fifty or sixty which were evidently on migration. The main body of our local birds left for northern climes between the 12th and 15th of March.

123. ‡ **Hirundo cucullata.** Larger Stripe-breasted Swallow.

I noticed this large Swallow in January and March 1912 on Lonsdale farm, but later looked elsewhere for it in vain.

124. ‡ **Hirundo puella.** Smaller Stripe-breasted Swallow.

The peregrinations of this Swallow call for some comment. The Smaller Stripe-breasted Swallow is a migrant, which, after breeding with us in great numbers, departs towards the end of February, and although many remain after the main body have gone, these latter also appear to leave before the end of March. It would appear, however, that a few individuals must winter in specially sheltered spots, as the promptitude with which this Swallow will appear in winter, directly we get some mild weather, is marvellous. The natives say that they hibernate in holes, but of course this cannot be taken seriously. The following excerpts from my 1912 diary bearing upon occurrences after the breeding season are of interest:—

4 March.	Although the great majority have left, there are still a few remaining here and there.
28 „	Several still about.
31 „	One.
27 April.	A small party of these Swallows and *Riparia cincta* flying N.W. at sunset.
2 June.	A solitary one in Matondo's valley.
18 August.	Solitary one flitting about lethargically on Makalanyoni.
22 „	A party of ten at Inengwe flying in company with two or three Rock-Martins. It is curious to remark the sudden advent of these Swallows directly the hot weather starts
28 „	A pair round Inungu.
1 Sept.	Two close to the Terminus Hotel.
3 „	Two round Njongi, flitting lazily about.

Unfortunately I left the district three days later; but there seems little doubt that the concluding notes herald the arrival of the breeding birds. In the nesting season this Swallow is practically confined to the kopje-country, and therein they affix their tunnel-entranced, mud-constructed nests to some overhanging rock or to the roof of a cave. Usually gregarious, single pairs not infrequently nest away from the main bodies, and I have found solitary nests in most unexpected places—in fact, practically anywhere, from the top of a kopje to its base, some being placed out of reach, whilst others were only a few inches or feet from the ground. The main bodies, however, almost invariably nest in inaccessible situations. The nest itself, in addition to its smaller size, may readily be distinguished from that of *H. cucullata* by the diminutiveness of the "dagga" pellets, and the consequent smoother general appearance. In common with those of its congeners, the nests are lined with feathers. The inaccessibility of the nesting-sites favoured by this Swallow ensure successful rearing of broods, and the number of young and old birds ready for migration in February is astounding. On such occasions I have noticed many *H. rustica* flying in their company, but observed that, whereas on resting, these resorted to trees, *H. puella* evidently preferred rocks.

125. **Hirundo semirufa.** Rufous-breasted Swallow.

The Red-breasted Swallow, unlike the last species, prefers the open country to the hills, and is a plentiful summer visitor with us. I noticed it on November 30, 1910, August 6, 1911, and from January 16 to May 27, 1912. The migrations of this Swallow seem to coincide with those of *H. puella*, and one has the same difficulty in accounting for their appearances during the dry season. In 1912, the majority left on or about February 28, but there were stragglers present up to the 29th of the following month, and I even took fresh eggs as late as the 1st of March. The occurrence of one at Bedza in May was exceptional. I found no less than seven nests of this Swallow, and all were in ant-bears' holes. The following are the data:—

Locality: Lucydale farm. Alt. 4350 feet.

8 February, 1912.	c/3	Incubation advanced.
9 „	c/3	Ditto.
11 „	c/3	Fresh.
15 „	c/3	Hatched.
16 „	c/3	Fresh.
20 „	c/3	Incubation very advanced.
1 March, 1912.	c/2	Fresh. (2nd laying.)

The eggs were in every case pure white, and showed a minimum length of 22 × 16·5 mm. and a maximum of 24·5 × 15·5 mm. over the series.

The nest of this Swallow is attached to the roof of the hole, and is usually beyond reaching distance from the surface—every nest which I found had to be dug out. Although the nest is usually attached to a flat surface, it is nevertheless built to fit inequalities upon occasion. A nest which I measured up, gave the following dimensions and weighed several pounds :—

	inches.
Length over all	16
Entrance neck, inside	1½ × 1¼
,, ,, above, length	5½
,, ,, below, ,,	3½
Bottom of entrance neck to roof of hole	3½
Average thickness of the clay	1½
Except that of the neck, which was	¾
And that of the nest bottom, which was	1
Greatest thickness of clay (at entrance rear of nest)	3
Distance from surface to entrance of nest	36

These particulars give some idea of the birds' industry. Amongst the clay there were numerous small bits of stone, and a lot of silicious black "dagga." The entrance neck was stained throughout with the birds' droppings, and the nest itself was very dirty beneath the feather lining—this is confined to the rear half of the chamber, the bare space in front probably being used for roosting purposes by one of the birds. Right at the bottom of the nest, between the feather lining and clay shell, a few strips of coarse grass are usually laid. On the 25th of January I shot a female, dug up and destroyed a nest close to the river, but found it incomplete, the birds being still engaged in the finishing touches of the feather lining. On March 1, I noticed Swallows at this hole again, and found a new nest built and two eggs already laid. The surviving cock had evidently procured another mate, and the birds had built the second nest just behind the remains of the destroyed one. From this I deduce that the male Swallow is responsible for the selection of the nesting site. I watched these birds some time before approaching the nest, and noticed that when not seeking food, the cock spends a lot of time perched on a convenient spray, twitting to his sitting mate. Later, both birds went off together, but soon returned, bringing feathers to add to the lining ; and this I noticed with other pairs, they evidently like to add fresh supplies as the original becomes dirty and downtrodden. On arriving at their particular hole, only one of the Swallows will enter at the time, and it is pretty to watch the other remaining with flapping, quivering wings overhead, and keeping almost stationary even against a strong wind.

If intruded upon at this juncture, the watchful bird will utter a querulous alarm-note (totally different from their usual twittering), but as a rule the bird below will remain sitting. Generally speaking, especially after the young have flown, *Hirundo semirufa* is more sluggish than the majority of Swallows, and is usually to be found in pairs, keeping much to themselves (a trait also shared by *H. cucullata*), except perhaps sometimes in the evening, when couples may occasionally be found congregated at a termite-feast or the like. At other times, noticeably during the heat of the early afternoon, I have noticed them perched on a sprig of "mimosa"—often a long way from water—remaining perfectly quiet and still, beyond preening a refractory feather or two as occasion demands. A female shot on February 8 measured 203 mm.; wing 123, tail 118, tarsus 15, and culmen 16 mm. Iris dusky brown; bill black; legs and feet dark lilac-brown. The four centre rectrices were immaculate, leaving only eight with the large white spots on the inner webs. Another female caught on the nest in February had the two centre rectrices only immaculate, the next two with very small white spots, and the rest with large spots. These variations are probably due to age, and the same may possibly be found to be the case also with *Riparia fuligula anderssoni* (*vide supra*).

126. ‡ **Delichon urbica.** House-Martin.

Chelidon urbica (Linn.); Scl. ii. p. 278.

The House-Martin occurs on its migrations, but I have only notes of its occurrence from March 12 to April 2. On one occasion I saw several in company with many *Hirundo rustica* and *Riparia cincta.*

127. **Bradornis pallidus murinus.** Mouse-coloured Flycatcher.

Bradyornis murinus Finsch & Hartl.; Scl. ii. p. 239.

Uncommon; and, I think, more often seen during the cold months than at any other time.

128. **Bradornis griseus.** Reichenow's Flycatcher.

There is a specimen in the Albany Museum collected by R. Williams in the Matopos (Annals Transvaal Mus. vol. ii. 1910, p. 150).

129. **Sigelus silens.** Fiscal Flycatcher.

Tarsiger silens (Shaw); Scl. ii. p. 219.

This species is a rare bird with us, but I have seen or procured specimens at Pomomwi, Njonga, Situku, and Gwenu ranges within the hills, and it is probable that it will eventually be found in other localities.

130. ‡ **Muscicapa grisola.** Spotted Flycatcher.

This migrant from Europe is an uncommon summer visitor with us.

131. **Hyliota rhodesiæ.** Rhodesia Flycatcher.

Hyliota rhodesiæ Haagner, Journ. S. Afr. Orn. Union, vi. 1910, p. 14.

The type from the Matopos is in the Albany Museum, and was collected by R. Williams.

This Flycatcher has the distinct characteristic of a broad white bar across the outer tail-feathers (Annals Transvaal Mus. vol. ii. 1910, p. 150).

132. **Batis** sp.

On June 24, 1912, and subsequently I met with a species of this genus which at first sight appeared, on account of its rufous flanks and wing-coverts, referable to the Cape bird—*B. capensis*. It was, however, considerably smaller than the common *B. molitor*; because of this, and also on account of its orange-red irides, I am led to believe that it may eventually prove to be identical with Mr. Swynnerton's *B. erythrophthalma* (Ibis, 1908, p. 93.) These Flycatchers used to frequent daily a large "umkuna" which was growing at the entrance of our cave, and were always very tame.

133. ‡ **Batis molitor.** White-flanked Flycatcher.

Pachyprora molitor (Hahn & Küst.); Scl. ii. p. 255.

A more or less common species throughout the district.

134. ‡ **Campephaga nigra.** Black Cuckoo-Shrike.

The Black Cuckoo-Shrike is but seldom seen, but I noticed an individual on September 1, which at first I mistook for *Dicrurus ludwigi*; but the extreme squareness of the tail, different note, and unapproachable manner at length led to its correct identification.

135. ‡ **Prionops talacoma.** South African Helmet-Shrike.

Fairly common, but hardly numerous. These peculiar birds procure a considerable amount of their food on the ground, but when flushed, invariably resort to trees with a soft "clicking" sound—evidently produced by the mandibles. At other times they may be found fluttering through the scrub from bush to bush, and allowing a close approach. In the evening, however, they resort to the larger timber, and I have found them roosting in such trees as the "umkamba," "umpumpu," "umngawe," etc. I once noticed a party of seven in open grassland flying a yard or so, settling for a few seconds, flying forward again, and they repeated these curious gambols for some hundreds of yards.

136. **Sigmodus retzii.** Black Helmet-Shrike.

The Black Helmet-Shrike is not uncommon, but never occurs other than in small parties of four or five, and the species is practically confined to the hills. These birds are much shyer than *Prionops,* and are not readily noticeable during the summer months on account of the screening foliage, but from May onwards they are more in evidence.

137. ‡ **Nilaus brubru.** Brubru Bush-Shrike.

Uncommon and somewhat local. I noticed several in June 1912; I also saw one close to Fortusher in 1908.

138. ‡ **Pomatorhynchus australis.** Three-streaked Bush-Shrike.

Telephonus australis (Smith); Scl. ii. p. 22.

Uncommon, except within the hills where it is more plentiful.

139. ‡ **Pomatorhynchus senegalus.** Black-crowned Bush-Shrike.

Telephonus senegalus (Linn.); Scl. ii. p. 19.

Sind. "umgabane" or "ukupane," also applied to the previous species.

More numerous within the hills than on the surrounding veld, and often found in kopjes; it also delights in frequenting the larger "dwalas." A male shot February 7 measured 223 mm. in length; wing 82·5, tail 113·5, tarsus 29, and culmen 20 mm. Irides light bluish-grey; bill blackish, merging into pale bluish-horn at tip and gonys; legs and feet bluish-grey.

140. **Chlorophonus** sp.

On several occasions in August 1912 I met with some Bush-Shrikes round the base of Mshingili and Mawa in "isiqwalapa," but I did not succeed in procuring a specimen. They were about seven or eight inches in length and were greenish-yellow above, including head and tail, and bright yellow below, merging into deep orange on the breast and throat. I noticed particularly that there was no yellow on the forehead. These Shrikes appeared to be *C. olivaceus* or a closely allied species; but the Olive Bush-Shrike, although recently recorded as far north as Chirinda in southern Melsetter by Mr. C. F. M. Swynnerton, has not yet been found at any distance westward.

141. **Laniarius major.** Large Puff-back Shrike.

Dryoscopus guttatus Hartl.; Scl, ii. p. 28.

These Shrikes are by no means rare birds within the hills, where they love to frequent such situations as the bush-covered banks of the Malemi River—below the Mshingili-Malamba Gorge. All the adult examples which I have examined have had the underparts well shaded with pink. The varied notes of this bird, together with its better known "duet-calls," are among the more familiar of our avian sounds.

142. ‡ **Laniarius atrococcineus.** Crimson-breasted Bush-Shrike.

Sind. "isikwe" (*vide post. Euplectes xanthometas*) or "ibilibomvu."

I have frequently heard of the occurrence of this Shrike, but have not noticed it personally. It will probably be found on the southern and western slopes of the hills if anywhere, as it is a common bird in the Mangwe district.

143. ‡ **Malaconotus olivaceus starki.** Southern Grey-headed Bush-Shrike.

Laniarius starki Scl.; Scl. ii. p. 41.

The "Spookvogel," as this Shrike is called by the Dutch, is a rare bird; I have only noticed it close to the Terminus Hotel, June 11, 1911, and August 13, 1912.

144. ‡ **Lanius collaris.** Fiscal Shrike.

Sind. "iquola."

Resident and not uncommon. I think this Shrike is, however, addicted to local movements at times. A nest found on the 26th of January contained three eggs of the closely-freckled pinkish type, which measured from 23 to 25 mm. in length, and 17·75 to 18·25 mm. in width The pink ground-colour of these eggs, when fresh, soon fades to a buffy-cream colour. The site chosen was in a low stunted "ilipana" tree in open mimosa-strewn country, and was placed about three feet from the ground. The nest was a somewhat flimsy structure of various coarse grasses, lined with very fine grass, but "white-ants" had got into the structure, so that the eggs had been pushed up by their workings until the cup had almost disappeared. The female, as is the wont of this, at other times, bold bird, slunk off, dropping down the tree for about two feet, and then flying off low to perch in the top of a tree about sixty yards away, where it remained a long time before venturing back. The undulating flight of this Shrike is usually low, and only from bush to bush, but occasionally I have noticed it mount up in the air to a considerable height. Drongos are arch-enemies of the Fiscal, and I have seen one steal an impaled caterpillar from a Shrike's larder; it was immediately given chase to, but, after dodging about through several trees, the Drongo succeeded in eluding further pursuit, whilst the Fiscal mounted up into the air to some height before returning to its perch on a neighbouring tree, where, with a good view over its remaining delicacies, it could incidentally regain its ruffled temper.

145. ‡ **Lanius minor.** Lesser Grey Shrike.

A summer visitor and not uncommon. Latest date on which seen, April 24.

146. ‡ **Lanius collurio.** Red-backed Shrike.

A numerous summer visitor, usually departing for northern climes about the middle of April, but in 1908 I noticed it at Fortusher as late as May 28.

147. ‡ **Urolestes melanoleucus.** Long-tailed Shrike.

Sind. "itjilobe."

I have not met with this Shrike personally, but am informed that it occurs in the mopani-tracts on the surrounding veld to the south.

148. **Corvus scapulatus.** Pied Crow.

Whilst at Fortusher I found this Crow present in small numbers between May and September, and I also noticed it in August 1911, but I do not appear to have any notes of its occurrence during 1912. The Pied Crow is addicted to local movements however, and, I think, the birds occurring in this district spend the greater part of the year around the abbatoirs and streets of Bulawayo.

149. **Heterocorax capensis.** African Rook.

Corvus capensis Licht.; Scl. i. p. 14.

A not uncommon resident of the surrounding veld, but only occasionally seen within the hills, and then confining its attentions to the cultivated valleys. I have seen as many as twenty together in old mealie-lands, but it is usually seen only in threes or fours.

150. **Corvultur albicollis.** White-necked Raven.

Sind. "lihwabai" or "ingwababa."

The White-necked Raven is resident and common, and at the same time one of our most noticeable birds. Although usually found in pairs, it is often gregarious when feeding on a carcase or other food, whilst parties may sometimes be noticed flying at a good height towards sunset, evidently, from their direction, returning from feeding grounds beyond the hills—reminding one forcibly of Rooks coming home to roost in the Old Country.

This Raven spends a lot of its time early in the wet season, when the crops are sprouting, on the lands of the neighbouring farmers; but, although certainly guilty of some harm, it is not nearly so destructive in this respect as the francolins, ducks and doves, whilst it often mitigates its crimes by devouring countless grubs, harmful to the crops.

151. ‡ **Dicrurus afer.** Fork-tailed Drongo.

Sind. "sontengu" (Chubb).

This Drongo was quite numerous in the "isiqwalapa" around Fortusher from May to September 1908; but in 1912 I did not notice this usually plentiful species until after the middle of March. Later in the year however it was common enough within the hills.

152. ‡ **Oriolus notatus.** Andersson's Oriole.

This Oriole is a rare bird with us, and I have only seen it on one or two occasions during the wet season. It should be looked for in the larger timber, within the thick foliage of which it is an adept at hiding; it is very hard to observe satisfactorily.

153. ‡ **Oriolus larvatus.** Black-headed Oriole.

Rather common on the surrounding veld, but more plentiful in the hills.

154. **Creatophora carunculatus.** Wattled Starling.

Dilophus carunculatus (Gmel.); Scl. i. p. 23.

An immature specimen noticed on May 6, in company with the "Makwezi," *Lamprocolius sycobius,* on Vriegevicht farm is my only record.

155. ‡ **Cinnyricinclus verreauxi.** Plum-coloured Starling.

Pholidauges leucogaster verreauxi Boc.; Scl. i. p. 44.

A not uncommon visitor, departing for its nesting-grounds about the middle of May. The old birds are generally rather shy, but at the same time I have noticed them greedily devouring pepper-berries in the immediate vicinity of habitations. The sexes rarely consort together during their stay with us, although towards the end of March, or in the first week of April, those flocks which have not departed, appear to break up, and I think in many cases pairing takes place before they set out for their breeding haunts.

A young male shot on February 7 was in rather an interesting stage of transitional plumage. All but the first three primaries on each wing showed traces of metallic coloration; outer greater wing-coverts metallic throughout and the inner brown; median wing-coverts brown except where the moulted ones had given place to semi-grown metallic feathers; lesser wing-coverts mostly mottled except for a few on each wing; scapulars—some metallic on the left wing only; a patch of seven or eight metallic feathers on the back (where present in the adult female); two or three higher up at side; a good many metallic feathers amid upper tail-coverts; one of the centre rectrices wholly metallic; two or three metallic feathers on each side of the neck; one on the throat; several outer under wing-coverts metallic at bases and mottled brown and white at tips. On March 30, 1912, I shot a male in full plumage, which, in lacking the three-quarter white outer web to the outermost feathers of the tail, was evidently referable to the northern *Cinnyricinclus leucogaster*—not previously recorded from southern Africa.

156. ‡ **Lamprocolius phœnicopterus bispecularis.** Lesser Red-shouldered Glossy Starling.

Common, and evidently resident.

157. ‡ **Lamprocolius chalybeus sycobius.** Peters' Glossy Starling.

Lamprocolius sycobius Licht.; Scl. i. p. 41.

Sind. "ikwezi," a term also applied to the last species.

Apparently resident and common, but owing to the similarity and consequent confusion between this and the last species, I have been unable to succeed in working out the correct status of either.

158. **Amydrus morio.** Red-winged Starling.

This Starling, although essentially a hill bird, invariably roosting therein, is constantly met with in foraging parties on the surrounding veld and foot-hills. These birds seem to feed principally in the early morning and late afternoon, and during the heat of the day are usually to be found round the higher kopjes, either perched on the top of a rock, or flying backwards and forwards in parties along the ranges, making the air ring with their peculiar musical whistle. The Red-winged Starling is a great pest where fruit is grown, but on the other hand devours large quantities of insects and their larvæ. For a nesting site, a small ledge or cranny on a krantz is chosen, and the eggs are therefore in many cases extremely hard to procure.

159. ‡ **Sporopipes squamifrons.** Scaly-feathered Weaver.
Sind. "isoñhlaga."

Undoubtedly our commonest bird in the open veld, but not found within the hills proper, although it occasionally wanders into some of the valleys on the fringes. It delights in the thorn-veld however, and in many cases is so plentiful that dozens of nests may be found within a very small radius. This Weaver is undoubtedly double-brooded, and, roughly speaking, laying commences in October and continues until May, while the second brood starts in February. In 1912 large numbers had flocked by March 21, but many others were still tied down by the cares of nidification, and I noticed them collecting nesting material as late as the 12th of May. The height at which nests are placed varies considerably, but a site about five or six feet from the ground is chosen in most cases; exceptionally, however, nests may be found as high as twelve to fifteen feet and as low as a foot. The eggs vary considerably, from the faintly marked grey and greenish type to the dark brown, whilst an unusual variety has the dark brown markings principally at the obtuse end—thus showing white ground-colour. Eggs in my possession measure from 17·75 × 11·50 mm. (17·50 × 12·00 mm.) to 15·0 × 11·25 mm.

Immediately previous to the flocking noticed in March, I found one or two nests containing young birds which had evidently been left to starve. The nestling is covered with greyish down.

160. ‡ **Anaplectes rubriceps.** Red-headed Weaver.

The Red-headed Weaver is decidedly uncommon, but nests in small numbers throughout the hills, and I have only seen it during the summer. The rough, and apparently loosely, but really strongly, constructed retort-shaped nests may be found suspended from some drooping twig of the majestic "umkamba," or other large tree, but I have never seen more than two or three in any one locality. Occasionally, new nests are built on to the previous year's habitation, but this is unusual. This Weaver, in company with the next, often breeds before attaining the adult plumage.

161. ‡ **Ploceus velatus.** Masked Weaver.

Hyphantornis velatus (Vieill.); Scl. i. p. 58.

Fairly common and presumably resident, but somewhat locally distributed. I found colonies in January and March (birds sitting) on the surrounding veld, while it must also nest within the hills.

162. ‡ **Pyromelana orix sundevalli.** Northern Red Bishop-Bird.

This is a plentiful breeding species in all localities suited to its habits. During a visit I made to the Dam in April 1911, I noticed that a large colony, which had built their nests amid the easily accessible bulrushes, had had them ransacked by native herd-boys, but, learning by experience, the birds had built their second nests in an aquatic plant growing in shallow water, which was at that time flowering, and I saw a lot of nests placed within a few inches of the water. On Lucydale I found these birds building "cock" nests in January, but they set about serious business early in February, and on the 21st of that month I found a clutch of four eggs among the rushes overhanging the water. There were also several other nests in the vicinity. On the 29th I found another colony, which had built in rushes over a dried-up mud-hole at the head of a valley. These Finks are double-brooded, and the old nests are perhaps used by some of the first brood for roosting purposes, as I know they often stay in the neighbourhood whilst their parents are rearing their second brood, and, I fancy, not infrequently lend a hand in feeding them. The second-brood nests are placed close at hand. When one approaches a colony, all the birds (males first) get very excited and move off a few yards, but they soon return and show great uneasiness anent their eggs. On one occasion, upon re-visiting a solitary nest—which I had noticed five days previously, containing two eggs—I found it deserted, and the eggs practically covered up with mud and little stones. Within a few yards the birds were busy with a fresh nest, which was, however, as yet in an unfinished state. On previous occasions I have noticed that both this species and *Euplectes xanthomelas* very quickly forsake their nest and eggs, if interfered with. The eggs vary considerably in size, and my series show a maximum of 22·50 mm. and a minimum of 17·25 mm. in length. Average width 14 mm. Typical nests are strongly constructed of coarse green grass lined with very fine grass, but very exceptionally, feathers are also utilized for this purpose. The nests are placed as a rule close to, or overhanging water, and are usually built in aquatic vegetation, but on one occasion I noticed an unfinished nest in a bush close to a dry watercourse running between a kopje and "dwala." In 1912 I first noticed young birds hatched on March 29, and these showed white down on the neck, dorsal, and forearm tracts. The breeding plumage of the male begins to change in some cases by the 1st of April, but the majority are later. The Red Bishop-Birds, as well as the Black-thighed species, are very fond of green mealies and "amabele," and I have noticed them, two or three on a cob at once, lustily pulling and rending it to pieces, keeping up the while a constant chatter, and unless they are continually molested, they will carry their depredations to an incredible extent.

163. ‡ **Euplectes xanthomelas.** Black-thighed Bishop-Bird.
Pyromelana capensis xanthomelæna (Rüpp.); Scl. i. p. 133.
Sind. "isikwe."

Fairly common throughout, and even found on the ranges well within the hills, where they are, if anything, more numerous. Uncommon at Fortusher in 1908. Although sometimes nesting along the rivers with, or close to the colonies of the Red Bishop-Bird, I have noticed that this species is more frequently found breeding away from water in this district. In March I found it nesting in tall grasses near the top of Mtaba mnyama. On November 30, 1910, I noticed several males in full breeding plumage and others in transitional; whilst I have found them changing back to their winter plumage as early as the 8th of March—the majority, however, begin to show brown plumage about the middle of April. This Bishop-Bird flocks in March or April, and then resorts to the cultivated lands and, in company with Kaffir Finks, Doves, etc., seems to devote as much time as possible to the general assault on the mealies and corn.

164. **Amadina erythrocephala.** Red-headed Weaver-Finch.
This Weaver-Finch is a bird which I have seldom seen here, and it will probably prove uncommon. Its ally—*A. fasciata*, which occurs at Bulawayo—may also be found, as I believe I saw an individual at the Kimono Mine in November 1910.

165. ‡ **Pytelia melba.** Southern Red-faced Weaver-Finch.
Common within the hills and fairly numerous on the surrounding veld. On February 7, I found a pair gathering nesting material and carrying it to an old scherm at an uninhabited kraal, and later noticed it frequently gathering feathers round our kitchen.

166. ‡ **Estrilda astrild.** Common Waxbill.
The Common Waxbill is a plentiful resident in the open country—where it delights in the open grassland bordering

streams where there are rush-beds in which to roost at night—but I found it a much rarer bird in the hills. I have noticed it feeding in the mealie-lands in company with the next species, and the quantity of noxious weed-seeds which these little birds consume is incalculable.

167. **Estrilda subflava.** Orange-breasted Waxbill.

The Orange-breasted Waxbill is common, but somewhat locally distributed. Like so many of our smaller birds it is evidently double-brooded, as I shot young birds in February, when this Waxbill was found in the willow bushes along the streams in small family parties, and towards the end of March I noticed them in pairs; but it was not until the 19th and 20th of April that I found nests. Altogether I saw five nests with clutches of five eggs, two of four, and many others incomplete. A clutch of three eggs found on the 19th was on the point of hatching. All these nests were placed in rushes close to the water, except one which was built in "black jack" and ten or fifteen yards from water. This Waxbill favours the same situations as the Red Fink for nesting purposes, and builds nests of very much the same design and construction outwardly. The nest is usually attached in four separate places, and in each case is firmly bound to three or four rushes. The domed nest is composed of fairly coarse grass and lined with finer grass, and with a more or less copious addition of feathers. One which I measured was $5 \times 2\frac{3}{4}$ inches, with a round entrance $1\frac{1}{2}$ inch in diameter; whilst a second was $4\frac{1}{4} \times 3$ inches with a $1\frac{1}{4}$ inch entrance. In several nests examined, the primary lining of fine grass was left protruding from the roof of the nest through the entrance, thus forming a good porch.

When flushed, the sitting bird, almost invariably quickly followed by its mate (which is somewhere hidden close at hand, skulking in the rushes), flies away a short distance uttering a soft plaintive twitter. Some nestlings examined were very dark-skinned, and had three little patches of white down on the head, spine, and rump. It is interesting to compare this species with *Pyromelana orix* in this respect, the Bishop-Birds having, at practically the same age, developed down as already remarked. The mouths of these nestling Waxbills are peculiarly spotted, somewhat in the same manner as those of *Ortygospiza polyzona,* except that the spots on the beak are hardly visible externally, and consist of two black, with a central white one both on the upper and lower mandible. The palate is also marked with seven blackish spots arranged three on either side with the seventh in between.

168. ‡ **Lagonosticta brunneiceps.** Little Ruddy Waxbill.

This is a rare Waxbill with us, but I obtained one of several on February 3, 1912, on Lonsdale Farm.

169. **Lagonosticta rubricata.** South-African Ruddy Waxbill.

Another rarity, and one which I have not noticed. Mr. Chubb, however, records it from Mt. Silozi (Proc. Rhodesia Sci. Assoc. 1908, p. 62) with the remark:—"This example is quite young, and judging from this it seems probable that this species breeds here."

170. ‡ **Lagonosticta jamesoni.** Jameson's Ruddy Waxbill.

Common within the hills, frequenting the bases of kopjes, but far less numerous in the open country. On the 24th of March I shot one—an adult male—which had the bill suffused with pinkish.

171. **Ortygospiza polyzona.** Quail-Finch.

This little bird is common on the open grasslands adjoining the north end of the hills, but is less numerous in other localities. Sometimes it is found amid rocks in the stream-beds, but it does not occur within the hills. I found nests towards the end of March and throughout April, and four eggs seem to be the usual clutch, although five are not uncommon. The eggs are pure white, and my series show a maximum of 14·50 and a minimum of 13·75 × 10·50 mm. The nest is placed in a tuft of grass, is slightly domed, constructed of very coarse dry grass and copiously lined with feathers. Some nests examined were made of similar materials, though not nearly so substantially built, but occasionally a lot of trouble is taken, and a complete dome is added. The sitting bird leaves the nest at the last moment, and the native "piccanins" sometimes catch the bird with their hands on account of this. Nestlings examined had greyish down on the dorsal tract and head only, and were peculiarly spotted along the commissure just in front of the gape. These markings consisted of a black line with two most conspicuous pure white spots along the side of the maxilla, and two black spots below on the edge of the mandible. An idiosyncrasy noted is that, whereas equal facilities are offered in the neighbourhood in the way of red and black soil, it is almost invariably the latter which is chosen for the site of the nest. Out of some dozens of nests found, only one was placed on red soil, and in one case I noticed two nests close together in a very restricted, isolated piece of black ground! Late in May I found this Weaver-Finch flocked with Smith's Lark in great numbers.

172. ‡ **Uræginthus angolensis.** Blue-breasted Waxbill.
Estrilda angolensis (Linn.); Scl. i. p. 102.

Not uncommon on the surrounding veld, and more numerous within the hills. In February, I found a nest about seven feet from the ground in an "umqogolo" tree, but as a rule the site usually chosen is an "isinga."

173. ‡ **Uræginthus granatinus.** Violet-eared Waxbill.
Estrilda granatina (Linn.); Scl. i. p. 104.

Somewhat uncommon, and I noticed it principally in the "maqaqa" country and foot-hills.

174. **Hypochera funerea.** Black Widow-Finch.

This is a rare bird with us, but I obtained a male (lacking white patches on the back) in breeding-plumage on the 4th of March, 1912, close to Matjanoyoni kopje. This bird, so far as I could determine, was unattended by any little brown mates. From the very glossy plumage it was evidently referable to *H. nigerrima* Sharpe. On the other hand, birds which I have shot on the Bulawayo commonage were duller and decidedly of the present species.

175. **Vidua serena.** Pin-tailed Widow-Bird.

Vidua principalis (Linn.); Scl. i. p. 145.

Not uncommon during the breeding season, and usually to be found in the vicinity of cattle kraals and native villages. I have noticed males in breeding plumage as early as November 30, and as late as the first week in April, 1912.

176. ‡ **Tetrænura regia.** Shaft-tailed Widow-Bird.

Vidua regia (Linn.); Scl. i. p. 148.

Sind. "intiga"; a term also applied to other small birds.

Rather uncommon and local. A male with some ten or twelve dusky followers frequented the homestead for some weeks in February and March, but in spite of diligent searches their nests remained undiscovered. It is possible, however, that this species shares the parasitical habits of the last named.

177. ‡ **Steganura paradisea.** Paradise Widow-Bird.

Vidua paradisea (Linn.); Scl. i. p. 149.

Sind. "isapunda"; "isagubuli" is also sometimes used, but this term is really the Zulu name for *Coliopasser procne*, which does not occur here.

Uncommon, and locally distributed. It is very common in Bulawayo and often seen with as many as fifty brown mates, but in the Matopos I have only noticed the cock followed by two or three wives. I have seen males which have lost their longest rectrices at the end of March, but the majority generally shed these feathers about a month later.

178. ‡ **Passer motitensis.** Greater South-African Sparrow.

A rare and shy bird. I met with several in trees on the top of Matjanoyoni on February 7, 1912.

179. ‡**Poliospiza angolensis.** Black-throated Seed-eater.

Serinus angolensis (Gmel.); Scl. i. p. 178.

Fairly common and resident throughout.

180. ‡ **Poliospiza gularis.** Streaky-headed Seed-eater.

Very common throughout; it is almost as destructive as the Bishop-Birds to "amabele." At other times this Seed-eater frequents the open grasslands in the morning and evening, but retires to the shelter of trees during the heat of the day.

181. **Serinus sulphuratus.** Large Yellow Seed-eater.

Not uncommon, and frequently to be seen in either the Dam or Terminus Hotel gardens. In winter they congregate with other species in the stubbles.

182. **Serinus marshalli.** Golden Seed-eater.

Serinus marshalli Shelley; Sclater, Annals S. A. Mus. iii. 1905, p. 313.

The Golden Seed-eater is a rare bird, but I obtained a male and female on the cleared ground in front of a hut in January 1912.

183. ‡ **Serinus icterus.** Icterine Seed-eater.

Sind. "intaga" (also applied to *Tetrænura regia* and other small birds).

Common and resident throughout. These little Seed-eaters are found in numbers in the open country, where they frequent the natives' lands and vicinage of kraals; at other times they are to be found at the tops of kopjes, swinging in the uppermost branches of small trees, and uttering their pretty song. In winter they commonly intermingle with Waxbills, Bishop-Birds, and Finches, and are then to be found in the stubbles, diligently hunting for small seeds, which form their principal food. I found nests in March and April (flocks of the species being noticed at the same time), and the site chosen generally is the fork of an "isinga," but exceptionally the nest is placed in an "umqogolo," "umkomatsana," or even an "mtokwe." One nest examined was made of dry grass, fine twigs, grass seeds, and a few small green leaves; the whole spun round and matted along the edge with vegetable down and spiders' webs; it was lined with shredded fibre and an extra lining of very fine grass in the bottom. The nest was circular and cup-shaped; over-all diameter $2\frac{1}{4}$ inches; over-all depth 2 inches, and inside depth $1\frac{1}{8}$ inches. This nest was placed in an *Olax dissitiflora* and the surrounding leaves were attached to the exterior, making the whole structure extremely hard to detect. Other nests were very similar and protectively decorated with lichen and spiders' webs, and as a rule situated nine or ten feet from the ground, but occasionally as low as three feet six inches. The nestlings, at first covered with yellowish down, are fed on insects; and by the time they are fledged their home becomes very dirty. The eggs are two or three in number and are of a very pale bluish ground-colour spotted with pale brown.

184. **Anomalospiza imberbis.** Rendall's Seed-eater.

Serinus imberbis rendalli (Cab.); Scl. i. p. 172.

I shot a male on January 15, 1911, in the Terminus Hotel grounds. Iris brown; bill dusky; legs and feet dusky-brown. The stomach contained small seeds and remains of insects.

185. ‡ **Emberiza flaviventris.** Golden-breasted Bunting.

The Golden-breasted Bunting is not uncommon in the open country, but is far more numerous within the hills.

186. **Fringillaria capensis media.** Deelfontein Bunting.

Fringillaria capensis media (Sharpe); Sclater, Annals S. A. Mus. iii. 1905, p. 314.

A common species during the summer, frequenting the kopjes and foothills, but, in common with the next species, evidently partially migratory, as I seldom noticed it during the dry season.

187. ‡ **Fringillaria tahapisi.** Rock-Bunting.

Very common in the hills, open veld, and "maqaqa" country during the wet season, but far rarer later. I found a nest on April 1 containing three nestlings with tufts of dark grey down on the head, dorsal and forearm tracts; the nest was made of coarse grass, copiously lined with finer, and placed under a tussock of grass on the top of a high river-bank.

188. ‡ **Motacilla capensis.** Cape Wagtail.

Resident in small numbers and frequenting all suitable localities, being most numerous in the valleys within the hills.

189. ‡ **Motacilla vidua.** African Pied Wagtail.

On November 20, 1910, I saw a couple on the Umzingwani River, between Fortusher and the Northern Star Mine.

190. **Budytes** sp.

I have twice noticed Yellow Wagtails during the autumn, and they were probably referable to *B. flava* Linn.

191. **Anthus trivialis.** Tree-Pipit.

The Tree-Pipit occurred in small numbers during the summer of 1912, and it will probably eventually prove a regular visitant at this season.

192. ‡ **Anthus rufulus cinnamomeus.** Tawny Pipit.

Anthus rufulus Vieill.; Scl. i. p. 251.

Not uncommon, and resident. Within the hills it is confined to the larger valleys.

193. **Anthus leucophrys.** Plain-backed Pipit.

Anthus pyrrhonotus (Vieill.); Scl. i. p. 250.

This Pipit, although I have not noticed it a great deal, is probably not uncommon. I did not, however, observe it within the hills.

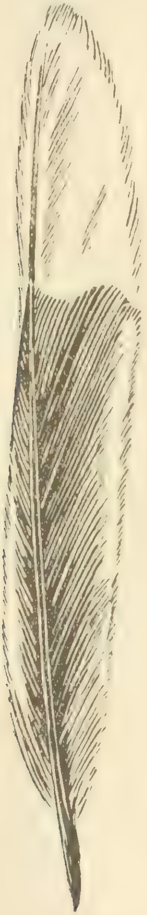
194. **Macronyx capensis.** Cape Longclaw.

Sind. "ligwenshi."

Common in the open country to the north of the hills, but I have not noticed it elsewhere. This Longclaw perches on bushes, trees, or rocks indiscriminately; in flight, the white-tipped rectrices are very conspicuous. The female sits closely, and I have known bird, nest, and eggs cut to pieces when hay is being cut. A male shot on the 6th of February measured: length 183 mm.; wing 95; tail 69; tarsus 30·5; culmen 16·5. This bird, apparently fully adult, differed from the typical form insomuch that in the outer rectrices the outer web was not wholly white (see text-figure 8).

The bill in this specimen, and all others which I have examined, was not dark brown, as described by Sclater, but had the upper mandible blackish-horn and the lower bluish-horn merging into blackish brown towards the tip; commissure and gape bluish-horn also. The underparts of the feet are dirty orange-yellow. These Longclaws are generally infested with ticks around their auditory orifices.

Text-figure 8.



Outer tail-feather of *Macronyx capensis.*

195. **Mirafra sabota.** Sabota Lark.

This Lark is a rare bird with us, but I have obtained specimens at the Dam Hotel, whilst I have also noticed it close to Figtree.

196. ‡ **Mirafra africana.** Rufous-naped Lark.

Sind. "incwelo."

Fairly common, but I did not notice it within the hills. On January 19 I found a nest containing two eggs; the nest was typical and placed in a natural hollow under a tussock of grass.

197. **Pinarocorys nigricans.** Dusky Lark.

Mirafra nigricans (Sund.); Scl. i. p. 207.

I saw this Pipit-like Lark in small numbers on the fringes of the Matopos in 1912, but it is decidedly a rare bird and does not seem to penetrate the hills to any extent.

198. ‡ **Pyrrhulauda leucotis smithi.** Smith's Lark.

Pyrrhulauda smithi (Bp.); Scl. i. p. 196.

Common and resident throughout the open country from Bulawayo, through the Dam and across to Figtree, but not occurring in the hills. At times this Lark is subject to considerable movements. In January I noticed them in pairs, and they breed in March and April, whilst they flock about the middle of May, and are then sometimes to be found in the company of Quail-Finches and other small birds on the open grasslands. At other times they love to frequent dusty roads, and in towns they resembled the Sparrow (*Passer domesticus*) in this respect, except that they do not resort to buildings. On the 20th of March, whilst breaking up an area on the open grasslands, I found a nest containing two eggs. The nest was situated in a hollow to the sheltered side of a tuft of grass, and, owing to the irregular shape of the nest and close assimilation of the materials and eggs to the surroundings, was an excellent example of protective coloration in this direction. The male participates in sitting. When flushed, the bird was silent and simply circled round at some height and settled on the ploughed land in the vicinity. The nest was composed of dry grass-blades and was fairly substantial. The eggs were fresh, of a greyish-white freckled all over with brown, and measured 20 × 14·5 mm. Another nest, found on the 17th of April, also contained two similar eggs, at an advanced stage of incubation, but measuring 19·5 × 15 mm. The nest, however, was made of coarse dry grass at the bottom and built up with brown vegetable fibre, with a little finer grass in the cup. The male (sitting) bird in this case was also undemonstrative. This Lark does not nest in the thick grass, preferring the barer situations.

199. **Calandrella cinerea.** Red-capped Lark.
Tephrocorys cinerea (Gmel.); Scl. i. p. 222.
Sind. "toli."

The Lark in question, which I am almost sure is referable to this species, occurs commonly in flocks during the summer months on the surrounding veld, but does not penetrate within the hills. It is to be found in small flocks of about twenty, which frequent the more open lands (more or less free from grass) and are generally to be found in old mealie-lands. This Lark runs fast, and very closely agrees in coloration with the red soil, which it seems to prefer to the black. I have, however, noticed it on freshly ploughed black soil; but it is amongst the stubbles that it is usually to be found: here, owing to the remarkably close assimilation of their plumage to the surroundings, they are exceedingly difficult to detect until they fly—when one's attention is immediately drawn by the invariable call. On April 15 I met with a very large flock, probably of several thousands, on open ground in the neighbourhood of Ross's Huts, but about a month later the flock appeared to break up, and towards the end of May I noticed the birds pairing and evidently about to nest. These Larks often drink at midday during the hot and close weather. It is rather a pugnacious species, and I have seen individuals darting up and chasing Swallows, when the latter flew by skimming the ground. A male shot on February 5 tallies with Sclater's description of the present species with the exception of its tail; this was blackish with the two central rectrices emarginated with buffish and the two outermost feathers (outer webs buffish) shading to white at their extreme edges. The median wing-coverts were also blackish with broad rufous tips. These Larks appear almost referable to *Tephrocorys anderssoni* (Scl. i. p. 224), but the under tail-coverts were white. Iris hazel; bill pinkish-horn, lighter below; feet pinkish-brown. Length 145 mm.; wing 85; tail 55; tarsus 20; culmen 12·5.

200. **Phyllastrephus strepitans.** Reichenow's Bristle-necked Bulbul.

This Bulbul is an uncommon species and confined to the hills, where I first noticed it on the Mawa Range in June 1912. Later I came across it on several occasions whilst stalking fugitive klipspringer, and on such occasions, the rustling noise which these birds make when turning over leaves in a thrush-like manner, has more than once deceived me as to the proximity of the buck. In their habits they closely resemble Thrushes, but are silent to a great degree, although when startled they resort to the trees uttering a loud note somewhat resembling that of *Crateropus jardinei*. There is also another species which I have failed to identify. It differs from *P. strepitans* in having the underside, including the under tail-coverts, white throughout, with the exception of the sides of the under tail-coverts or base of the rectrices, which are rufescent.

201. ‡ **Pycnonotus barbatus layardi.** Black-cap Bulbul.

Pycnonotus layardi Gurn.; Scl. ii. p. 63.

Sind. "ipoti" or "igiko."

This species is common throughout and extremely numerous within the hills, where it is also probably one of the most noticeable of birds. Whilst at Fortusher I found this Bulbul plentiful and very tame, coming on to the verandas morning and evening.

202. **Zosterops anderssoni.** Andersson's White-eye.

I only met with this White-eye during June 1912, when parties were to be found in the "isiqwalapa." On one occasion (I did not procure a specimen), from a short distance the eye-ring appeared to me to be distinctly yellow!

203. ‡ **Chalcomitra gutturalis.** Scarlet-breasted Sunbird.

Cinnyris gutturalis (Linn.); Scl. i. p. 286.

Sind. (?) "matungasweswi," a term also applied to other species.

Common at times; but, except in such places as the Hotel gardens, never numerous. On the open veld it is practically always found in the "mimosa" scrub, or where there is flowering vegetation. Both sexes have a very sparrow-like chirp.

204. ‡ **Cinnyris leucogaster.** White-breasted Sunbird.

The White-breasted Sunbird is very rare, and I have only met with it on one or two occasions. According to my notes, its occurrence is confined to the hills between Fortusher and the Mission Station.

205. ‡ **Cinnyris mariquensis.** Southern Bifasciated Sunbird.

Not uncommon; but in common with all other Sunbirds, subject to a great deal of local movement and but rarely met with during the colder months.

206. ‡ **Cinnyris chalybeus.** Lesser Double-collared Sunbird.

This is probably the commonest of the Sunbirds within the hills, and is especially in evidence amongst the "isiqwalapa." I have noticed it feeding in company with White-eyes.

207. ‡ **Parus cinerascens.** Grey Titmouse.

Parus afer Gmel.; Scl. i. p. 305.

The Grey Tit (grey above and below) is uncommon, but I met with it on Lucydale in January and May. This species was included in my Mangwe notes under the misnomer *P. afer*.

208. ‡ **Parisoma subcæruleum.** Tit-Babbler.

The little Red-vented Tit-Babbler is at times quite plentiful. On March 1, a sudden incursion of these birds was perceptible (I had not seen them earlier), and they remained throughout June.

209. ‡ **Anthoscopus caroli.** Andersson's Penduline Titmouse.

On January 17, I noticed a party in the gardens of the Terminus Hotel.

210. **Cisticola subruficapilla.** Grey-backed Grass-Warbler.

Not uncommon but local. On February 12, I found a nest containing three eggs placed about two inches from the ground in a small shrub amid grass—"white-ants" had practically enveloped the structure. On the 16th, two eggs had hatched out, but on the 24th there was only one young one and an addled egg, whilst the nest had been opened at the top—evidently to facilitate the feeding of the young ones. Eggs white, with a few red spots all over, but denser at the obtuse end.

211. **Cisticola natalensis.** Natal Grass-Warbler.

This is a rare bird with us, but I have occasionally noticed it in the rank herbage and long grass along the Malemi and elsewhere, whilst it may sometimes be seen perched on a tree or rock uttering its jerky call. It has been recorded by Chubb from Mt. Silozi, and there is little doubt that it will ultimately be proved a resident with us.

212. **Cisticola terrestris.** Wren Grass-Warbler.

Common in places, but inclined to be local.

213. **Cisticola** sp.

On February 8, 1912, I shot a Grass-Warbler which had the crown and nape rufescent brown, deepest on the forehead, lores white which was continued over the eyes and above the ear-coverts, where, however, it was tinged with reddish; ear-coverts like the crown; the feathers on the back dark brown with bluish-grey edges, the brown centres becoming less distinct on the rump: upper tail-coverts sandy-brown; tail, with the exception of the central rectrices, rufous with broad black bands (7 mm.) towards the tips, and tipped with rufous fading to buff; central rectrices—very much frayed in the specimen—a duller brown with only traces of the black bands at extreme end. Wings brown with lighter edges most noticeable on the secondaries and inner greater coverts; edge of wing whitish; lesser wing-coverts and scapulars showing traces of the bluish-grey edging present on the back. Chin, throat, and cheeks white; breast, flanks, and abdomen white, with a faint wash of sandy-buff; thighs pale rufous; under tail-coverts sandy-buff; under wing-coverts pale brown, becoming slightly rufous lower; upper axillaries white, and lower pale brown. Irides brownish yellow; bill black (bluish-horn on gonys, commissure black); legs and feet flesh-coloured. Length 126 mm.; wing 55; tail 52·75; tarsus 19·50; culmen 12.

I believe *Schœnicola apicalis* Cab. occurs, but have been unable to procure specimens.

214. **Acrocephalus palustris**. Marsh-Warbler.

During the summer of 1912 I obtained two examples of the Marsh-Warbler, but they were both in much abraded plumage. These birds occurred in a thick crop of "amabele" growing alongside water on Lucydale, but whether the species is a regular annual visitor I cannot say.

215. **Acrocephalus bæticatus.** African Reed-Warbler.

Common on Lucydale during the summer, and also noticed on the Malemi River within the hills in August. A male shot on February 5 measured 126 mm.; wing 63; tail 49; tarsus 23·5; culmen 13. The stomach contained minute Coleoptera and Culicidæ.

216. **Prinia mystacea.** Tawny-flanked Wren-Warbler.

Fairly common, but inclined to be local.

217. ‡ **Prinia flavicans.** Black-chested Wren-Warbler.

Common, especially on the surrounding veld. A nest examined on March 1, was placed in a "Milk-bush" situated on the open stony ground, and contained three eggs. The nest was typically shaped and suspended from leaves into a fork of bush, and was held to the stem in two places; in the case of the leaves it was attached by ribbons passing through the leaves—the necessary holes having been evidently made by the bird's bill. The nest was composed of fine grass, twisted and woven together and lined with very fine grass and vegetable down. Later in the year, I saw several family parties of young and old, evidently of this species, but all with pectoral bands (normally the young lack the dark chest-bands), but unfortunately I was not in a position to obtain a specimen.

218. **Apalis thoracica.** Bar-throated Wren-Warbler.

This little Wren-Warbler is, according to my observations, confined to the hills, where it is rather numerous. As a rule they frequent the larger trees, such as the "umkuna," but are often found assiduously examining "isiqwalapa" and "isinga." Our birds are of a smaller race than the southern ones, but I do not think sub-specifically distinct.

219. **Camaroptera griseoviridis sundevalli.** Grey-backed Bush-Warbler.

Camaroptera sundevalli Sharpe; Scl. ii. p. 113.

Uncommon and local, but I obtained specimens in March and April in the "maqaqa" country on Lonsdale farm, whilst I believe I have also seen it at Figtree Camp.

220. ‡ **Sylvietta rufescens.** Crombec.

Resident and fairly common throughout. These little Warblers have a peculiar habit of stiffening their necks and bobbing their heads up and down when uttering their somewhat plaintive call. A nest found on March 24 was placed in an "isinga" and the young had just flown.

221. **Eremomela flaviventris.** Yellow-bellied Bush-Warbler.

This little Warbler is rare with us, but may be looked for in the uppermost branches of the larger timber close to water. A locality where I noticed the species several times, is on the Malemi River below the Mshingili-Malamba Gorge.

222. ‡**Phylloscopus trochilus.** Willow-Wren.

An uncommon summer visitor, but I have noticed it here and there practically throughout the district. The Willow-Wren leaves for northern climes towards the middle of March. In November (shortly after their arrival), I have heard them singing—albeit half-heartedly.

223. **Sylvia sylvia.** Common Whitethroat.

Sylvia cinerea Bechst.; Scl. ii. p. 81.

Noticed in the "mimosa" scrub throughout February and March on the slopes rising to the Zambesi-Limpopo watershed. They are evidently annual visitors, as I found to be the case at Bulawayo, but are subject to some local movement. On March 24, I noticed larger numbers than usual—possible arrivals from the south on migration—and they were evidently fatigued, as they were exceedingly tame, and I even touched one with the barrel of my collecting gun, as it sat crouching ridiculously against a branch near the top of a low stunted "isinga." The latest date on which I met with the Whitethroat was March 30.

224. **Sylvia nisoria.** Barred Warbler.

The Barred Warbler occurred again in 1912 (*vide* Annals Transvaal Museum, iii. 1911, p. 109—specimen shot at Bulawayo, 1911) in January and February, and it would therefore seem that there is a probability that it is a regular annual visitor to Southern Rhodesia. Seebohm (Cat. Brit. Mus.) states that it probably winters in central Africa, but, as now it has been recorded from Rhodesia, and the Transvaal Museum possesses a specimen from Potchefstroom, southern Africa should be included within its range. All three specimens which I procured (including the Bulawayo bird) were in immature plumage.

225. ‡ **Crateropus jardinei.** Jardine's Babbler.

I am not sure whether Kirk's Babbler (*C. jardinei kirki*) occurs or not, but some of these Babblers which I have seen have appeared to be too small for the present species. Jardine's Babbler in the Matopo District is confined to the hills, where it delights in thickly wooded kloofs and kopjesides.

226. **Pinarornis rhodesiæ.** Rhodesian Chat-Warbler.

Pinarornis rhodesiæ E. C. Chubb, Bull. B. O. C. xxi. 1908, p. 110.

Although occurring on Mtaba mhlope and Mtaba muyama, the Rhodesian Chat-Warbler is essentially a bird of the hills and remote ranges, where it is very common, and in fact one of the most striking of our birds. I have watched these Chats for hours at periods over several months, but have failed in the attempt to find out anything about their nidification, and can only assume that they nest in clefts and crannies in very inaccessible places. They are almost invariably found in pairs, and they are equally at home on the ground (where a great deal of their insectivorous food is obtained), on trees, or on rocks; but all the same, they are never found at any distance from rocky situations, as it is amid such surroundings that they love to skulk and hide. Their flight is fairly strong but not generally protracted, whilst the loose and fluffy plumage imparts a singular gracefulness to their every movement. Although these Chats are often noticeably silent, they have a variety of notes, some of which are quite musical. The female appears to me to be browner than her mate, and is readily distinguishable at some distance.

227. ‡ **Geocichla litsipsirupa.** Ground-scraper Thrush.

Turdus litsipsirupa (Smith); Scl. ii. p. 173.

Strange to say I only met with this Thrush once—on March 30, when I saw several in tall trees close to a "dwala."

228. **Turdus libonyanus.** Kurrichane Thrush.

Only seen within the hills, where I noticed several in May, June, and August, at Mawa and other ranges.

229. ‡ **Thamnolæa cinnamomeiventris.** White-shouldered Bush-Chat.

Very common on, and in the neighbourhood of, the larger kopjes, and found throughout the hills. These birds often feed on the ground, but when disturbed invariably repair to rocks, on which they are greatly at home. When perched on bald boulders the wings are often partially extended and used as a prop, in the same manner as the Woodpecker uses its tail. The male is by no means a bad songster, and may frequently be heard pouring forth its melody, from the top of some rock, whilst it is also a clever mimic.

I have on more than one occasion taken ticks from the auditory orifices of specimens shot.

230. ‡ **Saxicola pileata.** Capped Wheatear.

Sind. "inqawana."

Noticed rather commonly at Fortusher in 1908, and later I found it occurring on the surrounding veld all round the hills. Specimens which I shot, in common with all the birds which I have handled in Matabeleland, measured under 150 mm. The young bird, besides being duller in tone, has the chest-band represented by a few dark mottlings. These Wheatears are usually infested with ticks.

231. ‡ **Pratincola torquata.** South-African Stonechat.

The Stonechat is rather a local species, but occurs commonly in the larger valleys of the hills. I found it principally along the Malemi River and in Matondo's Valley.

232. **Cossypha humeralis.** White-shouldered Robin-Chat.

On June 21, 1912, I obtained a specimen of this rare greyish Chat on Makalanyoni, but I did not meet with it elsewhere. Iris hazel; bill blackish; legs and feet dark brown.

233. **Cossypha caffra.** Cape Robin-Chat.

The Cape Robin-Chat occurred in August, but I only noticed it in one locality—a densely wooded kloof on the Inengwi Range. It is a shy species, and very apt to be overlooked, and possibly, in common with the last named, may prove more numerous than anticipated upon further research.

234. **Cossypha heuglini.** Heuglin's Robin-Chat.

These Robin-Chats are easily our best songsters, but one must be up early in the morning to hear their melodious babbling notes and modulated song; shortly after sunrise they become silent, and spend the remainder of the day skulking through the denser bush around the kopje-bases.

235. **Erythropygia leucophrys.** White-browed Ground-Robin.

This Ground-Robin is an uncommon species, occurring principally in the open country and foot-hills. As I have already remarked, I found this bird the host of the South African Cuckoo.

236. **Erythropygia pæna.** Smith's Ground-Robin.

On January 21 I met with this species in the gardens of the Terminus Hotel, but I never saw it again.

I believe *Tarsiger stellatus* Vieill. occurs within the hills, but have been unable to procure specimens of the bird in question.

237. **Phœnicurus familiaris.** Familiar Chat.

Saxicola familiaris Steph.; Scl. ii. p. 201.

The Familiar Chat is resident and plentiful throughout. Whilst at Fortusher, these birds, in company with Bulbuls, used to frequent the verandas and sometimes even venture inside the huts. Three eggs, taken from a nest under the roof of a hut, were a beautiful bright blue, with a confluent zone of reddish towards the obtuse end.

XXVII. *On some Petrels from the North-East Pacific Ocean.*

By Gregory M. Mathews, M.B.O.U., and Tom Iredale, M.B.O.U.

(Text-figure 9.)

While the senior author was dealing with the Petrels of Australia in the 'Birds of Australia' (vol. ii. 1912) he received a small collection of these birds from Mr. Alan Owston. The few skins received were of such great interest that more material was demanded. A second small lot arrived, but repeated requests have met with no further response. We now feel compelled to put on record the facts in connection with these few birds, as they indicate great discoveries and confirm our anticipations as to the home of some of our supposed wandering birds.

In the work quoted Mathews wrote (p. 1): "I also anticipate that, when this group is studied by means of breeding birds, it will be found that they are not the great wanderers they have hitherto been considered, but that the majority pass their time quite close to the breeding ground."

This statement was made in opposition to the views put forward by Godman in the 'Monograph of Petrels,' which may be crystallised in such a statement as appears on p. 28: "It would not be surprising to learn that a species of Petrel which summers in Japan should be found in winter off the coasts of Peru." That Godman's views were upheld by British ornithologists generally is easily seen by the admission into the British list of a bird breeding at the Kermadec Islands. Though one of us has denied the identity of the "British" specimen, this view has not been upheld by some British workers. The discoveries recorded in this paper would amply confirm Iredale's suggestion as to the occurrence of such birds in the Atlantic Ocean.

The most amazing result of our investigation is our proved inability to accurately name such a small collection as here discussed without practically re-monographing the genera represented. When we undertook the task it seemed simple, as we had so recently thoroughly dealt with all the species inhabiting Australia and New Zealand, and little trouble was anticipated. Our experience has convinced us that the usual method of reporting upon large collections is comparatively valueless, and the paper by Claude Grant in the January 'Ibis' is a good instance of the new method necessary. That worker finds that a monograph of each species must be prepared; had he only tackled the genera as well as the species it would have been a perfect example of up-to-date work. This latter detail has up to the present been ignored, yet, in our opinion, it is as necessary as the determination of subspecies. As a matter of fact we consider it the more important, and we anticipate in the future it will occupy a more prominent place than it does at present.

It would seem most profitable to systematically deal with the specimens under notice and then review the additional knowledge and indicate our conclusions.

Since the 'Birds of Australia' was published a very useful summary of the distribution of the Tubinares in the North Atlantic Ocean by D. A. Bannerman has appeared in the 'Ibis' for July 1914, pp. 438–494. Bannerman has confirmed the suggestion that these birds were local in their distribution and has observed (p. 442): "In all the comprehensive works dealing with 'Petrels' which have appeared, I can find no attempt at an explanation of the present geographical distribution which many species enjoy." In this paper we will show that our knowledge is much too imperfect to admit of conjecture in this direction, and it is well that such has been up to the present withheld.

In the 'Birds of Australia' the four families recognised by Salvin in the twenty-fifth volume of the 'Catalogue of Birds in the British Museum,' and upheld by Godman in the 'Monograph of Petrels,' were maintained, though the constitution of some of the subfamilies was questioned. We herewith discuss these in view of the fuller knowledge of the group we now possess.

Family HYDROBATIDÆ.

This name was used for the family Procellariidæ of the 'Monograph,' as the oldest genus name in the family was *Hydrobates*, which was not considered invalidated by the prior introduction of *Hydrobata*. Up to the present time no recognition of unanimity with regard to such a question is possible, as though American ornithologists consistently reject such similarly constituted names, British workers are divided in their methods: some consistently accepting such names as different and valid in each case, while others, and these are in the majority, consistently decide as to the acceptance or rejection of these disputed names, according to sentimental conclusions. Under the present conditions *Hydrobates* would be rejected by American workers and some British ones, while other British writers would use *Hydrobata*. Personally, the endings *-es* and *-a* do not seem sufficiently distinct for acceptance, but as we have not to use the name save in a family sense, we make no alteration. This is a question, however, which should be definitely settled, and then the ruling rigidly carried out one way or the other. At the present time a large number of names persist in this unsettled state, and this is not good for general workers as it causes much confusion.

This family was divided into two subfamilies, *Procellariinæ* = *Hydrobatinæ*, and *Oceanitinæ*. Only members of the latter occur in Austral waters, and consequently the species of the former have not previously been individually studied by us. The attempt to name one member has shown that there is much confusion, and we put on record our results for the benefit of future workers in this group.

Genus CYMOCHOREA Coues.

Cymochorea Coues, Proc. Acad. Nat. Sci. Philad. 1864, p. 75.

Type by original designation: *Procellaria leucorhoa* Vieillot.

The acceptance of this generic name has been made necessary by a study of the family, and we hope the following points will receive careful attention.

In the classification given in the 'Monograph of Petrels,' which is copied from the Cat. Birds Brit. Mus. vol. xxv., as there acknowledged, p. xxxiv, the subfamily is divided as follows :—

" *a.* Tarsus longer than the middle toe and claw ;
tail not distinctly forked.
a'. Tail rounded or nearly even.......... .... *Procellaria.*
b'. Tail wedge-shaped .... *Halocyptena.*
b. Tarsus not distinctly longer than the middle
toe and claw ; tail perceptibly forked .... *Oceanodroma.*"

As a synonym of "*Oceanodroma* Reichenbach (Syst. Av. p. iv, 1852. Type, *O. furcata*)" was included "*Cymochorea* Coues, Pr. Acad. Nat. Sci. Philad. 1864, p. 75. Type, *O. leucorrhoa*."

The species included under the generic diagnoses given do not agree with those as regards *Procellaria* and *Oceanodroma* ; details will be given later. As long ago as 1899, dealing with the Birds of the Galapagos Islands in the Nov. Zool. vol. vi. p. 199, Messrs. Rothschild and Hartert wrote :

"Genus *Procellaria* L.

(The genera *Procellaria*, *Halocyptena*, and *Oceanodroma* are so closely allied that they hardly require generic separation, but the characters mentioned in Cat. B. Brit. Mus. xxv. p. 343, can serve to distinguish them)."

This was followed by the record of "*Procellaria tethys* Bp." On the preceding page they had admitted "*Oceanodroma* Reichb." with a species "*Oceanodroma cryptoleucura* (Ridgw.)."

In the same journal, vol. ix. pp. 415/416, the same nomination was adhered to and an additional species, *Oceanodroma kaedingi* Anthony, catalogued.

Before criticising this classification we would note that in the 'Hand-list of British Birds,' by Hartert, Jourdain, Ticehurst, and Witherby, 1912, pp. 149–150, *Hydrobates pelagicus* (L.), *Oceanodroma leucorhoa* (Vieill.), and

Oceanodroma castro (Harcourt) (=*cryptoleucura* Ridgway), appear, so that we are not exactly dealing with ancient history.

We are emphasizing this as we contend that "lumping" of genera induces carelessness in the critical examination of birds as well as obscures alliances and confuses convergence with relationship, and we are here furnished with a beautiful example. We will discuss it in detail further on, but we would here justify our remarks by stating that *Procellaria tethys* has the tail "*distinctly forked*," while *Oceanodroma castro* or *cryptoleucura* has the tail not perceptibly forked. Yet Rothschild and Hartert, after examining both these birds, deliberately wrote that the characters given as above in the Catalogue of Birds "can serve to distinguish them." Had these workers been genus-splitters such a statement would not have been made, as careful examination of the birds to ascertain if differences existed would have enabled them to detect the inaccuracies present in the key.

The whole of the members of the subfamily admitted in the 'Monograph' read:—

Procellaria pelagica Linn., *P. tethys* Bp.

Halocyptena microsoma Coues.

Oceanodroma leucorrhoa (Vieill.), *O. beali* Emerson, *O. beldingi* Emerson, *O. kaedingi* Anthony, *O. castro* (Harcourt), *O. macrodactyla* Bryant, *O. tristrami* Stejneger, *O. melania* (Bp.), *O. markhami* (Salvin), *O. homochroa* (Coues), *O. monorhis* (Swinhoe), *O. hornbyi* (Gray), and *O. furcata* (Gm.).

In the American Ornithologists' Union's Check-list, 3rd ed. 1910, pp. 56–57, we have the following improvement as regards *Oceanodroma*:—*Oceanodroma*, subgen. s. s., sole species *furcata* Gm.; subgen. *Cymochorea* Coues, with species *O. kaedingi* Anthony, *leucorhoa* (Vieillot), *macrodactyla* Bryant, *castro* (Harcourt), *melania* (Bonaparte), *homochroa* (Coues), and *socorroensis* Townsend.

It will be seen that the only American species left in the typical subgenus of *Oceanodroma* is the type, all the others being classed under *Cymochorea*, but only subgenerically.

Our examination of all these birds causes us to differ both as regards the genera and subspecies to be recognised. Neither of the two works quoted admit subspecies at all, the 'Monograph' doubting the validity of some of the forms which in the 'Check-list' are admitted as species.

To deal with the genera first. In the 'Monograph' *Procellaria* = *Hydrobates* = *Thalassidroma* of the American 'Check-list' is diagnosed as above by means of the proportion of the tarsus to the middle claw and toe and presence or absence of a fork in the tail-feathers. Neither of these characters holds good in the species assembled under the genus, for the second species, *tethys* Bp., has the tail forked. This species is small like *H. pelagica*, but otherwise is a somewhat typical *Cymochorea*. Its removal would leave *pelagica* as the sole representative of *Procellaria* auct. = *Hydrobates* = *Thalassidroma*.

Oceanodroma should be restricted to the typical species *O. furcata* Gmelin, as though structurally there is little differentiation between the genotype and other species of *Cymochorea*, yet, as Coues pointed out, it possesses a radically different style of coloration. There is practically no difference in the coloration of species of *Hydrobates, Halocyptena*, and *Cymochorea*, though structurally there is considerable variation. The first-named is a very small bird, with a square tail and very short legs and feet; the second is even smaller, with more delicate legs and feet, but has developed a wedge-shaped tail. The last-named has, if *castro* be included, evolved from a somewhat small bird with a tail emarginate only, to a rather large one with a long-forked tail, while it has only diminished in size though also showing a fork in the tail in the case of *tethys* Bp. The only break in the uniform darkness of the coloration of all these species is the presence of a white rump in some cases.

In the four genera here indicated the wing formula is the same, viz., the second primary longest, the third very little shorter, the first and fourth subequal. The tarsus is covered with reticulate scales throughout, and the toes have sharp narrow, not flattened, claws.

It should be observed that the figure of *Procellaria tethys* Bp. in the Monograph shows a square tail; this is wrong, and though the specimen from which the plate was prepared is in poor condition and there is a good excuse for the artist so drawing it, Salvin wrote, from examination of the same skin, that the tail was forked.

The tail in "*Oceanodroma*" *castro* is not "perceptibly" or, as written in the 'Catalogue,' "distinctly" forked. At the best it would be described as "emarginate," while some specimens show little emargination even. Further, the tarsus is distinctly longer than the middle toe and claw, so that if the definitions in the 'Monograph' or 'Catalogue' were of any value *it would be a typical Procellaria = Hydrobates = Thalassidroma.*

Nevertheless we conclude that phylogenetically it is a *Cymochorea.*

When Coues separated *Cymochorea* and restricted *Oceanodroma* to *furcata* he included with that species *hornbyi* Gray. This bird was unknown to him save by description, and he followed Bonaparte, though remarking upon the different coloration. The type-specimen is still *unique* and is one of the most puzzling Petrels we have seen. It differs absolutely in coloration from *Oceanodroma* or the dusky Petrels of the *Hydrobates-Halocyptena-Cymochorea*-group. It recalls to us a similar anomalous form from the south, *Pelagodroma marina* Latham. In this case structural differences are co-existent with the strange coloration, and consequently the genus *Pelagodroma* is recognised by all workers. The species *hornbyi* has just as distinctive coloration, and as it does not correlate at all with any of the other members of the family, we propose for it the generic name

BANNERMANIA, gen. nov.

We would point out that the unique specimen differs in wing formula, having the second primary noticeably the longest, the first equal to the third and much longer than the fourth. The value of this from one specimen alone we cannot exactly gauge: the skin has been unmounted, and we cannot exactly determine the proportion of the tarsus to the middle toe and claw, but the tarsus seems longest.

We would then recognise five genera, *Hydrobates, Halocyptena*, *Cymochorea*, *Oceanodroma,* and *Bannermania.* The first three agree in coloration and structure and are closely allied, the last two resemble these in structure but show a great discord in coloration and have probably little direct relationship. To put it in other words, we would give the difference in coloration present more value than the difference in structure observed, or we would consider *Halocyptena* more closely allied to *Cymochorea* than *Oceanodroma* is to that genus.

We would then recognise :—

Genus *Hydrobates*
  Sole species *Hydrobates pelagica* (L.).
Genus *Halocyptena* Coues.
  Sole species *Halocyptena microsoma* Coues.
Genus *Cymochorea* Coues.
  Species *Cymochorea leucorhoa* (Vieillot) & subsp.
    „ *castro* (Harcourt) & subsp.
    „ *monorhis* (Swinhoe) & subsp.
    „ *homochroa* (Coues).
    „ *macrodactyla* (Bryant).
    „ *melania* (Bonaparte).
    „ *markhami* (Salvin).
    „ *owstoni*, n. sp.
Genus *Oceanodroma* Reichenbach.
  Sole species *Oceanodroma furcata* (Gmelin).
Genus *Bannermania* Mathews & Iredale.
  Sole species *Bannermania hornbyi* (Gray).

The names missing from the above list are *O. beali* Emerson, *O. beldingi* Emerson, *O. kaedingi* Anthony, and *O. tristrami* Salvin. All these have been referred to *Cymochorea,* but we are quite unable to determine the first three, while the last is specially dealt with later.

When Emerson (Condor, viii. 1906, pp. 53–55) introduced his two forms he gave us numerals indicating the differences. If his forms are no better than his numbers then they must be poor indeed, for his data are too confused to be at all intelligible. When a writer gives as his average measurements figures larger than his largest example, and then, to show there is no prejudice, in the next case gives as an average a figure smaller than his least, nothing can be done. We thought simply a misplacement had taken place, and this is observed to be the case in one instance, but altogether it is impossible to determine the truth. Consequently no reliance can be placed upon any measurements given in this paper, and until confirmation by some one able to exactly record measurements accurately taken, and *see that they are printed correctly*, Emerson's forms must remain obscure to the worker unable to examine topotypes. Emerson has in the same place brought into this confusion Anthony's *O. kaedingi*, so that we have left it alone. We do not mean to disparage Anthony's species, but we fear to add to the confusion.

O. socorroensis Townsend we should class as a subspecies of Swinhoe's *monorhis*. It is difficult to separate them, and they were lumped in the 'Monograph.'

In that work *C. homochroa* Coues is called the Ashy Petrel and this vernacular name is used in the A. O. U. Check-List. We are unable to see any reason for this, as the bird is no different in coloration to any other. In the 'Monograph' it is stated to be lighter than *C. monorhis*, but we are quite unable to appreciate this distinction. To our eyes the specimens seem *darker* than the type of *C. monorhis* Swinhoe.

The generic character of *Oceanodroma* of the 'Monograph' has been above given, and we have already indicated that *O. castro* does not well agree with the tail character, the fork being almost imperceptible, while the tarsus is certainly distinctly longer than the middle toe and claw.

In one of the large species, *O. melania* Bonaparte, the feet are strong and large and the tarsus is distinctly longer than the middle toe and claw, though the tail is long and forked.

It may be noted that in some of the species of *Cymochorea* the legs and feet are comparatively strong and in others they are delicate and weak, and this discrepancy is seen in birds of similar size.

Since writing the preceding we have referred to the 'Water Birds of North America,' by Baird, Brewer, and Ridgway. This work seems to us to reach the highwater-mark of excellence as regards the systematic portion. In it we find the genera *Halocyptena, Procellaria* (=*Hydrobates*), *Cymochorea*, and *Oceanodroma* recognised, with beautiful coloured figures of the heads and sketches of the bills, tails, and legs, together with careful diagnoses of the genera. The few errors apparent are due to lack of material. The species *hornbyi* is placed in *Oceanodroma,* as no specimen was accessible. We feel sure, had such been available, we would have been anticipated in its generic separation.

We will now describe as new a Petrel from the north-east Pacific.

Cymochorea owstoni, n. sp.

Adult male. Head, throat, and neck all round dark plumbeous ashy, a small ante-ocular patch darker; the back, scapulars, and rump are practically the same shade. A paler brownish patch is seen on the upper tail-coverts, due to the exposure of these feathers, the tips only being dark, the remainder pale brownish, the concealed bases being quite light. The tail-feathers and primaries are brownish black, the inner webs of the latter being paler brownish. The greater wing-coverts are very pale brownish, forming a distinct bar which is continued on to the bend of the wing, the lesser coverts being also very pale. From the lower neck to the under tail-coverts a uniform sooty-brown coloration prevails, the inner wing-lining being of this colour. The axillaries apparently are dark ashy grey. No soft parts are noted; but the bill is black and the legs dark brown, judging from the skin. Culmen 19 mm.; wing 184; outer tail-feathers 100; central tail-feathers 68·5; tarsus 28·5; middle toe 27.

Type, with data "1/5/02, ♂, Okinose, Sagami Sea," =Yokohama bay, Japan, in Coll. G. M. Mathews.

A second specimen, with data "Okinose, Sagami Sea, ♂, May '02, *Oceanodroma tristrami* Salvin?," measures:—Culmen 19 mm.; wing 182; outer tail-feathers 103; middle tail-feathers 70; tarsus 29·5; middle toe 26. In this bird the coloration of the head, neck, and back is darker (? due to oil), while the upper tail-covert patch of brown is lighter and more noticeable and the light wing-bar more pronounced.

This bird agrees very well in coloration and size with *O. markhami* Salvin, but is at once separated by the difference in the structure of the feet. In our bird the tarsus is heavy and the toes stout and long, while *O. markhami* has proportionately small and delicate legs and feet.

In the 'Monograph of Petrels' *O. tristrami* Stejneger is maintained, though the type was stated to be lost. This species was described by Salvin in the Cat. Birds Brit. Mus. vol. xxv. 1896, p. 354, the name used being a manuscript one of Stejneger. The description given is generally applicable to any of this group, but the measurements read: "Wing 6·20; tail 3·78, forked for 1·60; culmen 0·70, depth of bill through middle 0·20; tarsus 1·10; middle toe with claw 1·12 in." The locality was "Sendai Bay, Japan"; and Salvin notes it may have been immature, as the primaries were not fully grown.

In view of the discoveries of American ornithologists with regard to birds of this genus, the discrepancies in the measurements are too great to be minimised. This, in connection with the fact that the type is lost, necessitates the rejection of the name in this connection; and after studying this group, we suggest that the only method of identifying *O. tristrami* will be by means of specimens from Sendai Bay itself. Until a series from that locality is procured, the name should be regarded as indeterminable.

Family PUFFINIDÆ.

In the 'Birds of Australia,' vol. ii. 1912, p. 130, Mathews drew attention to the great distinction between the bills of the downy young of birds of the genera *Puffinus* and *Pterodroma*, and illustrated the differences with a figure. He continued the subfamily separation made in the 'Monograph,' and suggested that *Procellaria* (=*Majaqueus* auct.)

might prove to be a Puffinoid bird. Examination of a series of juvenile Petrels from New Zealand in the Vienna Museum collected by Reischek, enabled Iredale (Austral Av. Rec. vol. ii. 1913, pp. 17–24) to record some interesting data, and we now incorporate our most recent investigations in connection with these birds in the present review.

Mathews (*loc. cit.* p. 45) included *Puffinus* as used in the 'Monograph' and Cat. Birds Brit. Mus. vol. xxv.; on p. 129 *Pterodroma* displaced *Æstrelata* on the score of priority, the association of species being preserved.

Since then both of us have broken up these genera, and we add a further separation in this place. Now we would indicate the genera admitted and the species allotted to them, dealing with the old genus *Puffinus* first.

This genus, founded upon *Procellaria puffinus* Brünnich, has been enlarged to include all species having a similar or dissimilar bill which had "the look of a *Puffinus*." Neither structure nor colour-pattern has been adhered to, but a somewhat quaint rule-of-thumb process has become universal. If the bill of *P. puffinus* be compared with that of *P. kuhlii*, the difference observed is immense. If *P. kuhlii* be now contrasted with *Procellaria æquinoctialis* Linné, a much greater resemblance will be seen; yet these are placed in different genera. Mathews pointed out that the subfamilies recognised in the 'Monograph' were untenable; and we now emphasize the fact that the generic diagnoses provided in that work are as incorrect in connection with this group as we have shown them to be in connection with the preceding. Thus (p. xxxix) in the generic key we get:—

"*a.* Tarsi distinctly compressed, the anterior edge sharp.
  a'. Nasal tube flat, both apertures visible from above, directed forwards and slightly upwards; rectrices twelve in number .... *Puffinus.*
b. Tarsi not compressed, more rounded on the anterior edge; rectrices twelve in number.
  c''. Bill long, stout, mostly yellow in colour; unguis large; nasal tube directed forwards; claw of hallux small .... *Majaqueus.*"

If the typical species of *Puffinus* be compared with typical *Majaqueus*=*Procellaria*, the differences will be seen to be very great and not emphasized sufficiently by the diagnoses given, though the compression of the tarsus is almost as much in *Majaqueus*=*Procellaria* as in *Puffinus*. If *Puffinus kuhlii* be now placed between these two, in the main features it will be seen to be much closer to *Procellaria* than to *Puffinus*: the bill is longer but agrees closely with that of *Procellaria*; the tarsus is, however, not so compressed as in *Procellaria* and obviously differs from the flattened tarsus of *Puffinus* s. str., while the anterior edge is *not* sharp.

If *Puffinus leucomelas* be examined, discord with typical *Puffinus* is also seen as elaborated below. The species *Puffinus carneipes* Gould differs at sight in its peculiar bill, and from a study of the nestling stage Iredale separated it under the generic name *Hemipuffinus*.

Consideration of the other species of "*Puffinus*" caused Mathews, in the 'Birds of Australia,' to list the Australian forms in this manner:—

Genus *Puffinus* Brisson.
    Puffinus assimilis Gould.
Genus *Reinholdia* Mathews.
    Reinholdia reinholdi (Mathews).
Genus *Thyellodroma* Stejneger.
    Thyellodroma pacifica (Gmelin).
Genus *Hemipuffinus* Iredale.
    Hemipuffinus carneipes (Gould).
Genus *Neonectris* Mathews.
    Neonectris griseus (Gmelin).
        ,, *tenuirostris* (Temminck).
Genus *Ardenna* Reichenbach.
    Ardenna leucomelas (Temminck).

In the present collection there are representatives of the genera *Puffinus*, *Thyellodroma*, *Neonectris*, and *Puffinus leucomelas*. This necessitated the reconsideration of the genera utilised by Mathews, and we now go more into detail with regard to the relationships of the species. All the species are uniform above and below or white below, save *P. leucomelas* which has the head curiously streaked. For this species we are providing a new generic name. Colour considerations alone would suggest its separation from the remainder of the group. It will be discussed in detail later, so we would generally note the distribution of these genera and species and draw attention to some interesting facts.

Beebe has recently divided the Pheasants into many genera, concluding *that no two species of the same genus inhabit the same territory*. We welcome such a revolutionary conclusion with gratitude, as the study of sea-birds has enforced this fact upon us, but we should not have dared to put this before the ornithological world in the deliberate manner Beebe has done. Now that Beebe has opened this matter, we put forward our proposals with confidence. We will use the name "*Puffinus*" in the sense of the 'Monograph,' and note that it is really what Beebe calls a supergenus. We are, and have been, continuing investigations with regard to the supergenera of birds, and would scarcely regard "*Puffinus*" of the 'Monograph' as a homogeneous supergenus, but for the present it can be so considered. We will only use species-names here.

On the Kermadecs live:

Puffinus pacificus.	Genus *Thyellodroma.*
assimilis.	*Alphapuffinus.*

On Lord Howe Island live:

Puffinus pacificus.	Genus *Thyellodroma.*
carneipes.	*Hemipuffinus.*
assimilis.	*Alphapuffinus.*

On Norfolk Island live:

Puffinus pacificus.	Genus *Thyellodroma.*
assimilis.	*Alphapuffinus.*

In New Zealand live :

Puffinus griseus.	Genus *Neonectris.*
carneipes.	*Hemipuffinus.*
assimilis.	*Alphapuffinus.*
reinholdi.	*Reinholdia.*

In East Australia live :

Puffinus pacificus.	Genus *Thyellodroma.*
reinholdi.	*Reinholdia.*

In West Australia live :

Puffinus pacificus.	Genus *Thyellodroma*
carneipes.	*Hemipuffinus.*
assimilis.	*Alphapuffinus.*

From Bannerman's paper (Ibis, 1914) we find a similar distribution of birds in the North Atlantic. From the table on p. 443 we note that from the Azores, Madeira, Desertas, Porto Santo, Salvages, and Canary Islands breeding-records cover

Puffinus kuhli.	Genus *Calonectris.*
puffinus.	*Puffinus.*
assimilis.	*Alphapuffinus.*

While from the Cape Verde Islands are recorded

Puffinus kuhli.	Genus *Calonectris.*
lherminieri.	*Alphapuffinus.*

In the present collection we have breeding at the Pescadores Islands, between Formosa and the mainland :

Puffinus leucomelas.	Genus *Calonectris.*
griseus.	*Neonectris.*
cuneatus.	*Thyellodroma.*

While from the Bonin Group we have :

Puffinus cuneatus.	Genus *Thyellodroma.*
bannermani.	*Puffinus.*

It might be argued that what we have here considered genera are only species ; we would note, however, that there are other species belonging to most of the genera, and where there are none at present known it would be very unwise to dogmatise, as the few birds here studied upset most of the theories advanced by previous workers while enlarging our ignorance (we had nearly written knowledge) of the breeding-habits of these birds beyond previous anticipation.

Before going any further, we might indicate the greatest discovery in connection with this collection. In the American Ornithologists' Union Check-List, 3rd ed. 1910, p. 53, we have given as the range of

Puffinus griseus (Gmelin) :

"Oceans of Southern Hemisphere : occurs in summer on the Pacific coast from southern Alaska to Lower California, and on the Atlantic coast from the Gulf of St. Lawrence to South Carolina : accidental in Alabama : *probably breeds in the South Pacific*."

And on p. 54 :—

Puffinus tenuirostris (Temminck) :

"Breeds in Southern Hemisphere : migrates north along both coasts of the North Pacific to Kotzebue Sound, Alaska."

Puffinus cuneatus Salvin :

"North Pacific Ocean. Breeds on Hawaiian Islands, and islands off the coast of western Mexico : occurs in migration north to Bonin Islands, and Lower California."

In the 'Birds of Australia,' vol. ii. p. 98, Mathews noted : "This name (*chilensis* Bonaparte) must be accepted at the present time in preference of *N. amaurosoma* Coues (1864, p. 124), though later this latter name may have to be used for a north Pacific breeding-form (of *P. griseus*), the types of Coues's species having been obtained at Cape St. Lucas, Lower California. I am not at all certain that the birds met with in such numbers at the extremity of South America are the same as those which occur off the coast of California. There always seem to be discrepancies in the dates that need adjustment, and the recent discoveries of Petrels breeding in the north Pacific seem to point to many yet to be made."

On p. 103, with regard to *P. tenuirostris brevicaudus*, this point of view was again emphasized.

At that time Mathews was in receipt of the first consignment from Owston; but the second amply confirmed his conclusion, for it contained a form of *Puffinus griseus* breeding on the Pescadores Islands—a new record for the east Pacific Ocean, and a new breeding record for the north Pacific Ocean, because previously the only breeding places known of this species were in the south of New Zealand.

On the same group, the Pescadores, *P. leucomelas* and *P. cuneatus* were procured; while *P. cuneatus* was proved to breed on the Bonin group, and another form of *P. griseus* was received from the Kuril Islands.

Consequently it must now be admitted that all the species recorded from the north Pacific Ocean breed there, and thus a field for investigation is indicated, the fruits of which cannot be anticipated.

The next most important discovery is the receipt from the Bonin Islands of a new species of *Puffinus*, intermediate between *P. opisthomelas* Coues (=*auricularis* Townsend) from the coast of California and *P. newelli* Henshaw from the Hawaiian group. It is a distinct species, but these are its nearest allies, and as *P. newelli* Henshaw is almost extinct, it is a most interesting addition to the group of the true *Puffinus*. These discoveries suggest that a careful search of every rocky islet in the north Pacific may bring to light just as unexpected forms, and that no dogmatic conclusions regarding the distribution of Petrels can yet be attempted.

We would emphasize how coloration may be a generic character, or even supergeneric, in connection with *Puffinus* and *Pterodroma*.

These two genera were long distinguished by their appearance, there being little structural difference to grasp; yet when once one of the species of the former genus was examined and compared with one of those of the latter, all the species could be easily separated into these two groups, though variation in coloration, form, and size was commonly observed. It was almost impossible to write down the differences, and practically no one has attempted to do so. Neither Coues nor Ridgway were as happy in their diagnoses in connection with these as with most groups, yet their association of the species was correct.

Neither Salvin nor Godman attempted any generic diagnosis, the keys given being inaccurate when the species were examined. Yet by means of colour and form these groups can be separated, and that they are very distinct groups is proved by study of the nestlings, as was first shown by Mathews.

Pterodroma always has a black bill; *Puffinus* never has, though sometimes almost a unicolorous bill. The main difference, and one which is quite diagnostic, is in the colour of the legs and feet.

In *Pterodroma* the feet may be black: we note this first, as it is a very rare occurrence and principally when the bird is very dark and unicolor. Even then, the majority of birds show bicoloured feet. *The distribution of colour in the feet forms a generic or supergeneric feature. The tarsus and the proximal joint of the toes is wholly light-coloured, the remainder being dark.* This is easily seen in skins, and most figures show it.

Puffinus never has the legs and feet black, but always more or less bicoloured. *The distribution of colour in the feet forms a generic or subgeneric feature. The outside of the tarsus and the outer toe are always dark when compared with the inside and inner toes.* In the majority of cases this is very prominently seen, the outside being blue-black and the inside yellow. In both cases nestlings in down show these diverse styles of leg and feet coloration.

The genus *Puffinus* covers, in the 'Monograph of Petrels,' twenty-five species, as follows:—*P. leucomelas* (Temm.), *cuneatus* Salvin, *bulleri* Salvin, *chlororhynchus* Less. (=*pacificus* (Gmelin)), *gravis* (O'Reilly), *kuhli* (Boie), *edwardsi* Oustalet, *creatopus* Coues, *anglorum* (Kuhl) (= *puffinus* Brünnich), *yelkouanus* Acerbi, *opisthomelas* Coues (= *couesi* Mathews), *auricularis* Townsend (=*opisthomelas*

Coues), *newelli* Henshaw, *subalaris* Ridgway, *gavia* Forster (=*reinholdi* Mathews), *persicus* Hume, *obscurus* Gm. (= *lherminieri* Lesson), *auduboni* Finsch, *assimilis* Gould, *elegans* Giglioli & Salvadori, *bailloni* Bp. (=*baroli* Bp.), *carneipes* Gould, *griseus* Gmel., *tenuirostris* Temm., and *nativitatis* Streets. The first-named has a peculiar style of coloration; but all the rest are either uniform above and white below, or uniform above and below.

Our classification would read:—

Genus *Calonectris*, nov.
  leucomelas (Temminck).
  kuhli (Boie).
Genus *Ardenna* Reichenbach.
  gravis (O'Reilly).
  creatopa (Coues).
Genus *Puffinus* Brisson.
  puffinus (Brünnich).
  couesi Mathews.
  opisthomelas Coues.
  newelli Henshaw.
  nativitatis Streets.
 Reinholdia Mathews.
  reinholdi (Mathews).
 Alphapuffinus Mathews.
  assimilis (Gould).
  lherminieri (Lesson).
  persicus (Hume).
 Hemipuffinus Iredale.
  carneipes (Gould).
 Thyellodroma Stejneger.
  pacifica (Gmelin).
  cuneata (Salvin).
  bulleri (Salvin).
 Neonectris Mathews.
  tenuirostris (Temminck).
  griseus (Gmelin).

We consider *edwards* Oustalet a subspecies of *kuhli*, *yelkouan* Acerbi a subspecies of *puffinus*, *subalaris* Ridgway and *auduboni* Finsch subspecies of *lherminieri*, and *elegans* G. & S. and *bailloni* Bp. subspecies of *assimilis* Gould.

The relations of the genera seem to be ill-defined: *Calonectris* and *Ardenna* stand quite apart from all the rest with regard to size and form and to some extent coloration also; while though the lateral compression of the tarsus of species of *Ardenna* is as much as in any other member of the group, and this lateral compression of the tarsus is almost a supergeneric character, *Calonectris* differs in this feature. Consequently we cannot state that these two genera are as closely allied as a superficial examination suggests. Neither would we be justified in allying them to any other genus. There is a huge gap between them and *Puffinus*, and they approach *Procellaria* (=*Majaqueus*) more nearly. Perhaps they are nearest to *Priofinus*, which they resemble closely in coloration and with which genus the species have sometimes been confounded. In considering this genus we have noted that Coues observed that it was very close to *Puffinus*, and Mathews went so far as to lump it with *Procellaria*, noting it only differed in coloration. *Procellaria* is, so far as at present known, a Puffinoid form, but it is wholly black and does not show the supergeneric character of the peculiar coloration of the legs and feet. We now see that *Priofinus* does show this character, and that therefore it must be placed alongside *Ardenna*. Still, this does not help us with the affinities of the species, but only adds another problem.

Puffinus s. str. is homogeneous, and we trace it into *Reinholdia*, which differs in the very diminished tail, and into *Alphapuffinus*, which contains the smallest members of the group with small bills but average tails. We are here again at a loss as, unless we work through the species *cuneatus*, we cannot account for the dark long-tailed *Thyellodroma*. All the species of *Puffinus*, save *nativitatis* Streets, *Reinholdia* and *Alphapuffinus* are bicolor; while in *Thyellodroma*, *cuneata* and *bulleri* are bicolor, the former perhaps dimorphic, and *pacificus* unicolor. Contrasted with these is the genus *Neonectris* with unicolorous, short-tailed forms, one weak-billed and the other strong-billed, and the genus *Hemipuffinus*, a heavy-billed bird, whose bill is abnormally unlike any other species in the supergenus.

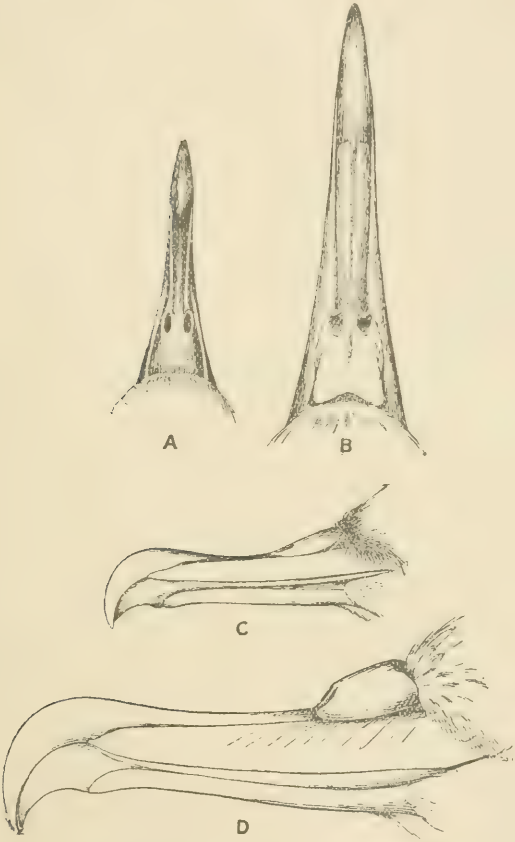
The coloration of juveniles does not help us in this group as the downy young passes into the colour-feathering of the adult. Geographical distribution cannot be utilised at present, as we do not know where the birds breed with sufficient exactness to theorise at all.

Genus CALONECTRIS, nov.

We propose this genus-name for *Puffinus leucomelas* Temminck, which differs in coloration from every other member of the group. In its large size it comes near the genus *Ardenna*, and was placed under this genus by Mathews in his List of the Birds of Australia. Though agreeing fairly well in bill-characters with *Ardenna*, it differs in the structure of the legs and feet. *Ardenna* agrees, in having the tarsus very much compressed, with *Puffinus* sensu lat. *Calonectris* has the tarsus comparatively little compressed, and this feature is only shared with it by the species *kuhli*, which we temporarily associate with it. When it is recalled that of the twenty-five species included under the genus *Puffinus* in the 'Monograph of Petrels,' ranging from very large to quite small birds, twenty-three show the great lateral compression and only these two do not, it must be conceded that this is quite a valuable character. In the adult the bill differs obviously from that of *Puffinus* in the position and structure of the nasal tubes, and at once suggests *Procellaria*. The relationship of that genus is, however, with *Ardenna* through *Priofinus*, so that the bill formation becomes secondary to the feet formation.

In this connection the danger of genus lumping as regards anatomical study should be noted. Anatomists are notoriously careless of the nomenclature of the material they handle, and if any of the species of *Puffinus* (sensu latissimo) were handed to an anatomist for study, it would sooner or later be utilised as typical of the genus. In the present case, the peculiar tarsal structure suggests coincident anatomical variation. Another peculiarity of the tarsus is that it is shorter than the chord of the culmen, a feature not shared by any other Puffin-like birds, save *P. kuhli*. The more we study that species the more resemblances we

Text-figure 9.



A. Top view of bill of *Puffinus bannermani*.
C. Side view of ditto.
B. Top view of bill of *Calonectris leucomelas*.
D. Side view of ditto.

perceive to *C. leucomelas,* so that with our present knowledge it seems strictly congeneric. A further examination of *Priofinus* suggests that this is related to *kuhli* rather than *Ardenna*, and that it would bear the same relation to *kuhli* as *Priocella* does to *Fulmarus.* If only nestlings were available we would be able to state definite relationships, whereas at present we can only suggest them, though we consider our suggestions are well-founded and will later prove correct.

Calonectris leucomelas.

Procellaria leucomelas Temminck and Laugier, Planch. Color. d'Ois, vol. v. livr. 99, pl. 587, 1835 : Seas of Japan.

Two specimens labelled :—

"Pescadores Is., May 1909. *Puffinus leucomelas* (Temm.)."

Measurements :—

Culmen 54, wing 326, tail 151, tarsus 51, mid-toe 58 mm.
,, 55, ,, 327, ,, 148, ,, 51, ,, 58 ,,

These are both adult breeding birds in good plumage; this would appear to be the first record of breeding birds, all the previous notes and specimens referring to sea-killed birds or migrants.

In coloration these birds agree well with the description given in the 'Monograph,' but not with the figure, which represents a different bird as is there stated ; our birds, however, have the throat streaked as well as the malar region.

Genus Puffinus.

Puffinus Brisson, Ornith. vol. vi. 1760, p. 130.

Type (by tautonymy) : *Procellaria puffinus* Brünnich.

To this genus, as restricted to birds agreeing with the type in the structure of the bill, legs and feet, and in general proportions, we have the pleasure of adding a new species.

Puffinus bannermani, sp. n.

Adult. General coloration above sooty-black, the head and neck bluish black washed with ashy, the hind neck noticeably so ; the interscapular region shows feathers having a broad lighter tip giving a scallopped appearance. The remiges and rectrices sooty-black, the inner webs of the primaries brown. A white streak under the eye. All the under surface from chin to under tail-coverts pure white: lores ashy; under the eyes and sides of neck the feathers tipped with white, while there is a patch extending on to the sides of the breast, where the dark and white are about equal, having a mottled appearance. The shorter tail-coverts are white with brown spots near tips, while the longer ones are all black with scant white tips. All the edges of the under wing-coverts brown, succeeding row half white, centre pure white: *i. e.* the marginal coverts brown, the lower primary coverts and under secondary coverts pure white. Axillaries pure white. The bill is blue-black; legs and feet distinctly particoloured in the typical puffinoid manner, judging by the dried skin.

Type. "North Iwojima, Bonin Is., Feb. 1910. *Œstrelata longirostris* (Stejneger)" is the label with full data in Japanese.

Culmen 32, wing 214, tail 81, tarsus 42, mid-toe 40 mm.

Others measure:—

Culmen 31, wing 216·5, tail 79, tarsus 40, mid-toe 39·5 mm.
„ 31, „ 214, „ 80, „ 41, „ 40 „

This is a most interesting addition to the genus *Puffinus* s. str., its nearest relatives being *Puffinus newelli* Henshaw and *P. auricularis* Townsend, the correct name of which Mathews has shown to be *P. opisthomelas* Coues. It cannot be confused with either, though we know the former only from description and it is said now to be extinct or nearly so. It is separable at once from *P. newelli* in the difference of the coloration of the upper surface and the under tail-coverts, and from *P. opisthomelas* Coues (nec auct.) in the different upper coloration and size. It has the wholly white malar region of *P. newelli*, but the sides of the neck are mottled like *P. opisthomelas* Coues.

Mathews (Birds Austr. vol. ii. 1912, p. 67) wrote:—

"The acquisition of material from the Pacific points to the fact that *Procellaria obscura* Gmelin may after all have been procured at Christmas Island, but I purpose to deal in detail with this most interesting collection at a later period when I have obtained more material. In this case we might have :—

"*Puffinus obscurus obscurus* Gmelin. Christmas Island.
„ „ *opisthomelas* Coues. Revillagigedo Group.
„ „ *newelli* Henshaw. Sandwich Island."

This was written when the first consignment with a solitary specimen of this bird was available. Study of the three specimens in connection with *P. opisthomelas* Coues and the description of *P. newelli* Henshaw suggests the absolute rejection of *P. obscurus* Gmelin until topotypes are available. We further do not feel inclined to consider the present form as subspecifically related to the others in view of the difference in general coloration, while the difference in size between *P. opisthomelas* Coues and *P. newelli* Henshaw is too great to treat them in this way, especially as they differ in the somewhat important character of the mottling of the side of the neck, to say nothing of the difference in the colouring of the malar region, under tail-coverts, etc.

Genus THYELLODROMA Stejneger.

Thyellodroma Stejneger, Proc. U. S. Nat. Mus. vol. xi. 1888, p. 93.

Type (by original designation) : *Procellaria pacifica* Gmelin.

The species-name *pacifica* is almost characteristic of this genus, as it would appear to be confined to the Indo-Pacific Oceans and not to range into the Atlantic. *Hemipuffinus* has also a restricted range, while *Reinholdia* is only very locally known at present.

We have placed the species *nativitatis* under *Puffinus,* but it may be that it should be placed in conjunction with this genus ; wherever it is classed it is quite an aberrant form. Probably the wisest course would be to designate it with a new subgeneric name and thus attract attention to it. We would therefore propose

Sub-genus MICROZALIAS, nov.

for *Puffinus nativitatis* Streets.

The genus *Thyellodroma* is composed of bicolor and unicolor species, and these are large, but not the largest, puffinoid birds with long wedge-tails. Whether there are two or three species is not yet decided, and though Mathews regarded two only as specifically distinct, we here revert to the treatment in the 'Monograph,' where three were admitted.

The genus covers the only case in the puffinoid group where dimorphism or interbreeding is suggested, and probably later information will once more radically change our conclusions.

Thyellodroma cuneata cuneata (Salvin).

Puffinus cuneatus Salvin, Ibis, 1888, p. 353; Krusenstern Island, Marshall Group.

This species was described from a couple of skins from the Marshall Group, and the further history of its discovery is retailed in the 'Monograph,' p. 76. In the 'Birds of Australia,' vol. i. 1912, pp. 82–84, Mathews discussed the phases and lumped all the birds previously named *Puffinus cuneatus* under *Puffinus pacificus*, distinguishing several subspecies. In the present collection six specimens occur, and a re-investigation of the group was necessary. We now differentiate two species, *T. cuneata* and *T. pacifica*, and note that the subspecies as regards general coloration are constant save in two localities.

An example from Owston's collection is labelled as follows:—

"Bonin Is., May 1910. *Puffinus cuneatus* Salv."

Culmen 41, wing 280, tail 137·5, tarsus 47, mid-toe 48 mm.

General coloration above brownish; below pure white with a slight freckling of grey on sides of body; under tail-coverts brown. Compared with the type of *Puffinus cuneatus*

Salvin there is practically no difference to be observed. the latter having the head slightly darker as also the wing-coverts, but this may be due to age; there is slightly more freckling on the sides of the breast, and the axillaries are darker and the under wing-coverts more splashed with grey. The measurements of Salvin's type are:—Culmen 42, wing 300, tail 135, tarsus 49, mid-toe 50 mm.

The Bonin Island bird in the skin has the bill light horn, the tip darker, while the legs and feet are dirty-yellow, almost uniform, but slightly darker on the outside.

Another specimen is labelled:—"Iwojima, Bonin Island, 15th July, 1911. *Puffinus tenuirostris* Temm."

Culmen 39, wing 294, tail 137·5, tarsus 49, mid-toe 52 mm.

This example agrees even more closely than the preceding with the type of *Puffinus cuneatus* Salvin.

A third labelled "Iwojima, Bonin Island, 15/7/11, ♂ *Puffinus tenuirostris*," has the culmen 41, wing 296, tail 135, tarsus 47, mid-toe 52 mm., and is very similar to the others, but has less freckling of grey on the sides of the body, an almost pure white under-wing and grey axillaries with white tips.

These two have very pale legs, scarcely darker on the outside of the tarsus, while the outer toe shows distinct dark spots on the joints, otherwise little difference in colour.

One labelled "Iwojima, Bonin Is., Aug. 1910, *Puffinus tenuirostris* (Temm.)" is a most interesting specimen as it is a fully-grown immature bird. It measures: culmen 41, wing 280, tail 131, tarsus 47, mid-toe 50 mm. The upper coloration is of a greyer tinge throughout, and the feathers of the upper back and under wing-coverts have broadish white tips; all the under parts are faintly but fairly regularly freckled with ashy; the under-wings are white with ashy markings predominating, the shafts of many feathers dark; the axillaries are dark ashy splashed with lighter ashy; the bill is dark horn throughout, and the legs and feet are pallid, the outside faintly darker.

An example marked "Muko Is., of Bonin Group, 5/11/1911, *Puffinus leucomelas* (Temm.)," is a young in down; the forehead bare of down, showing greyish brown as in the preceding specimen, and chin whitish with ashy freckling and the breast regularly freckled ; all the rest of the under-surface down-covered save the under tail-coverts, which have whitish tips showing ; the down is ashy, and of a paler shade in the centre of the abdomen ; the back and wing-coverts are exactly of the same colour as the above-mentioned bird with similar broad white tips ; wings very short and dark ; feet showing dark edges and joints ; the bill long and very thin, sides dark yellow-horn, rest very dark ; nostrils distinctly on each side of culmen ridge, which is clearly separated from the laterals. Chord of culmen 39·5 mm.

An example from "Pescadores Island, 15th May, 1909, *Puffinus cuneatus*," has the culmen 39, wing 287, tail 136, tarsus 148, mid-toe 50 mm. It agrees very closely with the first-mentioned specimens.

In the British Museum is a specimen with the data "♀, 5th June, 1890, P. A. Holst, Sulphur I., Bonins," and the soft parts are given in detail thus : "Bill light grey, except upper part from groove and hooked tip black, also upper part (edges) and hook of lower mandible black. Tarsi and feet whitish pink, somewhat dusky at the joints on the outer side. Irides faint brown."

This series is practically typical, and it is noteworthy that no dark birds occur. The downy young with the freckled under surface and the fully grown immature show the same feature, while all the adults are pure white below : this is very interesting, but gives no clue to the dimorphism apparently found on San Benedicto Island, but suggests further inquiry at that place. It might be observed that the Bonin Island form has a very slender tarsus. We would again emphasize our ignorance of Pacific Ocean breeding Petrels by stating that no white-breasted "*cuneata*" is known from the south Pacific Ocean, but a white-breasted species called *Puffinus bulleri* Salvin is rarely known from New Zealand waters, its breeding place being unknown. A similar form has recently occurred off the Californian coast, but its breeding-place is also unknown. The New

Zealand bird does not wander to California: such a statement would seem absurd. All birds from the Indian Ocean, western and eastern Australia, and southern Pacific are uniformly dark. From Laysan comes a white-bellied form with a few uniform birds intermingled, while on San Benedicto Island, off the Mexican coast, a uniform bird occurs with a light-breasted one, the dark bird predominating. From the Pescadores Islands a single light-breasted bird has been received, almost certainly a breeding individual, and it is very probable that only white-breasted birds of this group occur on the Islands, as dark birds received prove to belong to *Neonectris griseus* (Gmelin) subsp.

The apparent variation in coloration observed at San Benedicto Island and Laysan is quite unparalleled in this family, and is more puzzling than in the case of *Æstrelata neglecta* Schlegel, with whose phases one of us is very familiar. In that case we have a variable species at three or four different localities with nothing very similar otherwise known. In the present case we have two very distinct species, quite constant, found in many localities, and then a commingling of the two on one or two groups of islands in different ratios. This strongly suggests hybridism and the separation of the two as distinct species. Adopting this view we would therefore restrict *Puffinus pacificus alleni* Mathews (Birds Austr. vol. ii. 1912, p. 83) to the dark bird, and note the forms of *T. cuneata* as follows:—

Thyellodroma cuneata cuneata Salvin.	Marshall group, Vulcan group, Bonin Island, Pescadores Islands.
T. c. laysani Mathews.	Laysan, Hawaiian Group.
T. c. subsp.	San Benedicto Island, Mexico.

Genus NEONECTRIS.

Neonectris Mathews, Austral Av. Rec. vol. ii. 1913, p. 12.

Type (by original designation): *Puffinus brevicaudus* Gould.

This name was proposed by Mathews as the names used previously for this genus all proved untenable. It differs from the preceding genus in its short tail, though agreeing in its dark coloration throughout. That it should be generically separated rather than subgenerically is a point upon which we anticipate criticism, mainly from workers who glance at the small superficial differences, without considering the lessons to be deduced from such small discrepancies.

We have indicated that *Thyellodroma* has a distribution confined to the Indo-Pacific Oceans. It is found breeding probably throughout the tropical and temperate Pacific Ocean, north and south of the Equator, and in the Indian Ocean among the Mascarene Islands and West Australia.

Neonectris breeds in southern-east Australia and south New Zealand, in both cases in more southerly regions than species of *Thyellodroma*. It occurs abundantly in southern South America, suggesting a southern breeding-place: it has occurred in the north Atlantic as a straggler, and has always been thought to breed only in the southern Hemisphere. It ranges along eastern North America, and these birds were also relegated to southern breeding-places.

Mathews (Birds Austr. vol. ii. 1913, p. 103) was probably the first to suggest that this conclusion was incorrect, as though Stejneger had previously noted that the birds found on the Commander Islands were "probably breeding," he laid no stress upon this, and his statement was consequently ignored.

We now record breeding birds from the north Pacific Ocean, and emphasize the fact that all statements as to northern birds breeding in the south are mere unconfirmed suggestions and with the present knowledge worthless.

The fact that *Neonectris* breeds in the north Pacific Ocean and the south Pacific Ocean, while *Thyellodroma* breeds in the mid-Pacific Ocean, leads us to give generic value to the slight difference which can hardly be superficially observed. Though *Thyellodroma* and *Neonectris* are apparently so alike, in life they present different appearances, so that they can be recognised at sight: their habits are different, and their notes differ essentially so that even in the dark they can be distinguished.

Neonectris griseus pescadoresi, subsp. n.

Two specimens, labelled "Pescadores Is., May 1909, *Puffinus carneipes* Gould," are the first record of this species from the western Pacific Ocean and also the first record of the species as a breeding bird north of the Equator. These two birds were taken from breeding-burrows, and have the base of the bill somewhat denuded of feathers through digging. The fact that Owston labelled them "*Puffinus carneipes*" indicates the nature of the bill, as that species has a heavy bill and flesh-coloured legs: these specimens have not flesh-coloured legs but have stout bills, which characterise the subspecies.

The birds are brownish above, the head black; there are brownish tips to the scapulars and greater wing-coverts; chin ashy; under surface ashy brown, paler on the breast; axillaries brown; the under-wing feathers ashy with dark shafts. There is practically no difference whatever in the two specimens, the paler breast being rather more pronounced in one bird, which has also the under wing-coverts lighter.

Measurements:—

Culmen 42, wing 292, tail 86, tarsus 55, mid-toe 54 mm.
(Type of the species.)

Culmen 43, wing 291, tail 96, tarsus 56, mid-toe 56 mm.

The type-locality of *Neonectris griseus* (Gmelin) is New Zealand, where in the extreme south it is an extremely abundant breeder. One of the writers has seen them in countless numbers passing to the breeding-ground so often written about. Neozelanic specimens show little difference in the measurements save in the bill, which is short and more slender, an average example measuring:—Culmen 39, wing 290, tail 87, tarsus 56, mid-toe 54 mm.

Neonectris griseus missus, subsp. n.

Two specimens, labelled "Kuril Island, *Puffinus griseus* (Gmelin)," differ at sight from the preceding in their different coloration, being purer ashy throughout, lacking the brown coloration so noticeable in the form above described. We at first thought these might be more freshly plumaged birds, but we note that the base of the bill is also denuded of feathers, indicating digging and breeding birds. As the difference in coloration is also accompanied by a slight variation in the bill measurement, as given below, we have to differentiate the form by name.

The under-wing coloration varies, one being more ashy, the other more white, otherwise the two birds are very similar in every way. They measure:—

Culmen 44, wing 296, tail 86, tarsus 57, mid-toe 53 mm. (Type of the species.)

Culmen 45, wing 301, tail 87, tarsus 57, mid-toe 55 mm.

In this race the bill is longer than in the preceding, but it is proportionately more slender.

Mathews (Birds Austr. vol. ii. 1912, p. 98) wrote:—"This name (*chilensis* Bonaparte) must be accepted at the present time in preference of *N. amaurosoma* Coues, though later this latter name may have to be used for a north Pacific breeding form, the types of Coues's species having been obtained at Cape St. Lucas, Lower California. I am not at all certain that the birds met with in such numbers at the extremity of South America are the same as those which occur off the coast of California. There always seem to be discrepancies in the dates that need adjustment, and the recent discoveries of Petrels breeding in the north Pacific seem to point to many yet to be made."

Examination of the specimens available of *N. griseus* suggests confirmation of this statement, as Monterey birds all agree in having longer bills, legs, and toes than Chilian specimens. From the fact that *N. griseus* breeds on the Pescadores Islands, it would be almost a certain guess that a form breeds somewhere off western North America which is quite distinct from the bird breeding in southern South America.

It should be observed that instead of "*P.*" *carneipes* and "*P.*" *tenuirostris*, the two anticipated breeding "*Puffinus*" in Japanese seas, Owston sent two forms of "*P.*" *griseus*, a new bird for the locality in every sense. What else may still be hidden?

Genus Cookilaria.

Cookilaria Bonaparte, Comptes Rendus Acad. Sci. Paris, vol. xliii. 1856, p. 994.

Type (by original designation): *Procellaria cookii* Gray.

In the 'Birds of Australia,' vol. ii. 1912, pp. 129–132, Mathews showed that *Pterodroma* must be used instead of *Æstrelata* on the score of priority, if the association of species brought together in the 'Monograph' be maintained.

Later, in the 'Ibis,' 1913, p. 233, the present writers differentiated the genus *Cookilaria* for the type species, leaving all the rest in the genus *Pterodroma*. The group is very difficult to segregate, as Coues experienced; but it is just as certainly *polyphyletic*. At present the one fact certain is that *Cookilaria* is easily recognisable.

Mathews (*loc. cit.* p. 168) wrote:—

"The group of small Petrels ranged round *Pterodroma cookii* is well marked, and the subspecies are easily recognisable. At present the subspecies known are:—

Pterodroma	*cookii*	*cookii* Gray.	New Zealand.
„	„	*leucoptera* Gould.	East Australia.
„	„	*nigripennis* Rothschild.	Kermadec Group.
„	„	*axillaris* Salvin.	Chatham Islands, New Zealand.
„	„	*defilippiana* Gigl. & Salvad.	Western South America.
„	„	*longirostris* Stejneger.	Japanese Isles.

The receipt of specimens of *Œstrelata hypoleuca* Salvin (Ibis, 1888, p. 359, Krusenstern Is.) shows this species to belong to *Cookilaria*, though in the 'Monograph' it was associated with *mollis* and *torquata*, with which it was compared when described many years previously."

The characters of the forms are so slight that subspecific value seems most suitable, but upon close examination we find the differences so peculiarly ranged that we are perhaps dealing with species. Thus, while all are certainly very closely allied and congeneric, the two forms most exactly alike as to upper coloration, viz., *nigripennis* and *defilippiana*, have very differently coloured primaries. This would be less remarkable were it not that another couple almost exactly agreeing in upper coloration, viz., *leucoptera* and *hypoleuca*, differ in the same respect. The two pairs differ very decidedly, the former being the palest, the latter the darkest of the series.

The two forms that have dark primaries, viz., *hypoleuca* and *nigripennis*, are the darkest and lightest of the lot; while the two darkest, viz. *leucoptera* and *hypoleuca*, and the two lightest, viz. *defilippiana* and *nigripennis*, differ most in the coloration of the primaries. Species of *Cookilaria* have different habits, flight, and notes from species of *Pterodroma* or *Æstrelata*, and can be recognised at sight or in the dark. *Pterodroma* and *Æstrelata* are difficult to separate, as so little is known about the species at present. At the Kermadec Islands three species of the genus *Pterodroma* sensu lato breed together, viz. *P. cervicalis* Salvin, *P. neglecta* Schlegel, and *P. nigripennis* Rothschild. If it were true of this group that no two birds of the same genus breed together, then we would know that *P. cervicalis* Salvin and *P. neglecta* Schlegel should be referred to different genera. As a matter of fact, though these two birds differ very little in structure or coloration, so that from skins it might seem impossible to allot them to different genera, the birds are very different in nature, having dissimilar habits (*P. neglecta* breeding above ground, *P. cervicalis* in burrows) and very distinct notes. The downy young of *P. cervicalis* is like a macromorph of that of *P. nigripennis*, and differs in down colour-pattern from the young of *P. neglecta*. In coloration *P. cervicalis* is absolutely constant, while *P. neglecta* shows remarkable variation in coloration. Again, the egg-shell of *P. cervicalis* is peculiar when contrasted with that of *P. neglecta*. Such details may not impress the genus-lumper, but it is as well that they should be recorded in this connection with the suggestion that *P. cervicalis* and *P. neglecta* are representatives of distinct genera. We have already noted that *Cookilaria* is very distinct in all the above factors.

Cookilaria cookii hypoleuca.

Œstrelata hypoleuca Salvin, Ibis, 1888, p. 359: Krusenstern Island, Marshall Group.

"North Iwojima, Bonin Is., February 1910. *Œstrelata hypoleuca* Salv." Full data in Japanese.

Culmen 26, wing 230, tail 120, tarsus 32, mid-toe 32 mm.

Differs from the type of *Œ. hypoleuca* Salvin, which measures: culmen 26, wing 228, tail 120, tarsus 29, mid-toe 29 mm., only in having the feathers of the rump darker.

"Sagalien Is., April 1909. *Œstrelata hypoleuca* Salv." Also data in Japanese.

Culmen 25 5, wing 236, tail 114, tarsus 30, mid-toe 30 mm. Agrees absolutely with the preceding.

These are practically typical specimens, so that it is almost certain that the Sandwich Island birds require a new name: no form of this genus is known to inhabit different localities, those from east Australia, Kermadec Islands, New Zealand, and Chatham Islands respectively being all well characterised.

Genus BULWERIA.

Bulweria Bonaparte, Nuov. Annal. Sci. Nat. Bologna, vol. viii, for 1842, Jan. 1843, p. 426.

Type (by monotypy): *Procellaria bulweri* Jardine & Selby.

So much has been written about this very distinct genus that we can add nothing. In the 'Monograph' it is placed after *Pagodroma nivea* (Gmelin), as anatomical study has proved it to be very aberrant in some features considered of importance. The formation of the bill and skull recall *Pagodroma* to us, and the opposition of coloration is very remarkable if these two should prove closely allied. It seems, as does *Pagodroma*, to be related to *Pterodroma* more nearly than to any other genus.

Bulweria bulweri pacifica, subsp. n.

Type, labelled "Iwojima, Bonin I. ♂, 15/7/11. *Bulweria bulweri*."

Culmen 23, wing 210, tail 119, tarsus 27·5, mid-toe 27·5 mm.

We separate the Pacific-breeding Bulwer's Petrel on account of its stronger bill, no other difference being apparent: the coloration agrees very closely with Atlantic specimens, and there is very little variation in size. Two other birds received measure:—

"Iwojima, Bonin Is. ♂, 15/7/11. *Bulweria bulweri*."

Culmen 23, wing 206, tail 105, tarsus 27, mid-toe 27 mm.

"Iwojima, Bonin Is. ♀, 15/7/11. *Bulweria bulweri*."

Culmen 22·5, wing 206, tail 109·5, tarsus 27, mid-toe 27 mm.

We made our comparisons with specimens from Madeira, the type-locality of *P. bulweri* Jardine & Selby, and noted that Atlantic Island birds generally agreed with these, while other Bonin Island birds and birds from Foochow, China, agreed with our Pacific birds. We now note that in the 'Ibis,' 1914, p. 268, Bannerman gives measurements of Canary Island series thus:

22 males—Culmen 20·5–23, wing 187–205 (average 196·5), tarsus 25·5–28 mm.

4 females—Culmen 20·5–21, wing 191–200 (average 195·5), tarsus 26·5–27·5 mm.

It will be noticed that our three specimens are all larger in the culmen and wing than the Canary Island birds. Bannerman, in the 'Ibis,' 1914, pp. 488–494, remarks on the discontinuous distribution of this species, occurring in the eastern Atlantic and then recurring in the north Pacific, and comments upon it. The most peculiar fact, however, to us, is the difficulty in separating these breeding colonies subspecifically, while from the Fiji group in the middle Pacific a distinct species of *Bulweria* is known.

General Remarks.

The imperfection of our knowledge of the breeding places of Petrels is emphasized by the preceding collection. The recognition of a breeding form of *Neonectris griseus* (Gmelin) on the Pescadores Islands is quite a novel fact. We were confident that breeding places of "*P.*" *tenuirostris*, *carneipes*, and *griseus* would be found in the north Pacific Ocean, but we would have suggested for the *griseus* form a far north breeding place as it is the furthest southern breeding "*Puffinus*."

The acquisition of an entirely new species of *Puffinus* was much less unexpected, but it is none the less welcome, while a new species of *Cymochorea* was not anticipated. We might draw attention to the treatment of "*Oceanodroma hornbyi* (Gray)" by the American Ornithologists' Union. In the Check-List, 3rd ed. 1910, p. 370, it has been placed on the Hypothetical List, as since it was described in 1854 from the north-west coast of America it has not been again met with. In the Birds Austr. vol. ii. 1912. p. 141 *et seq.*, under the name *Pterodroma melanopus*, is detailed the history of a bird which was described in 1844 and was not rediscovered until 1911, yet it is a common bird at the new locality, which is not inaccessible to visitors. We further note that in 1881 Baird, Brewer, and Ridgway (Water Birds N. Amer. vol. ii. p. 411) commented on *Cymochorea melania* (Bonaparte) thus:—"That it should not since (1854) have been met with is a strong indication that it does not belong to our fauna." The breeding-place of this bird is now known, so that of *O. hornbyi* (Gray) may be just as near. If this bird were re-transferred to the Check-List proper, we think it would become a source of greater interest and research than it is while retained in its present position. We have thus digressed to emphasize our views once more that forms of *Puffinus tenuirostris*, *griseus*, and *bulleri* will all be found breeding off the west coast of North America, and suggest that the islands off the coast north of Vancouver to Alaska may hide these and other breeding forms.

As this paper deals only with Petrels we may perhaps be allowed to add a note of interest foreign to the preceding. We would like to point out that the names proposed by us are arbitrary combinations of letters without any meaning whatever, unless we definitely give such. We consider it often impossible to guess the meaning of a word, and we would here cite the curious case of *Daption*. Stephens gave this name to a genus of Petrels and many workers have studied Greek dictionaries, attempting to extort a meaning. *Daptrion*, *Daptium* and *Daptes* have been suggested, the last mentioned now appearing as the meaning in the recent B. O. U. List of British Birds. It has recently occurred to us that *Daption* is simply an anagram or metathesis of *Pintado*, a seamen's name for the bird, and that our predecessors' labours for a derivation from the Greek have been in vain.

XXVIII.—*Studies on the Charadriiformes.*—I. *On the Systematic Position of the Ruff* (Machetes pugnax) *and the Semipalmated Sandpiper* (Ereunetes pusillus), *together with a Review of some Osteological characters which differentiate the Eroliinæ* (*Dunlin group*) *from the Tringinæ* (*Redshank group*). By Percy R. Lowe, M.B., M.B.O.U.

(Text-figures 10 & 11.)

In the British Museum Catalogue of Birds (vol. xxiv.); in the British Museum Hand-list of Birds; in Seebohm's 'Geographical Distribution of the Charadriidæ'; in the recent 'B. O. U. List of British Birds,' 1915, and in fact, so far as I am aware, in every systematic treatise or book in which a distinction is made between the subfamilies Tringinæ (Totaninæ *olim*) and Eroliinæ (Tringinæ *olim*), the Ruff is included in the subfamily Tringinæ or the Redshank group of Waders, as opposed to the Eroliinæ or the Dunlin association.

In some works, such as the A. O. U. Check-List of North American Birds, no distinction is drawn between these two subfamilies, and the Ruff is included under the Scolopacinæ; in other works it is still more comprehensively sheltered under the wide-spreading wings of the Charadriidæ: while in the 'British Bird Book' one notes that the species which make up the Redshank subfamily are grouped indifferently along with the Dunlin association under a division which purports to be the subfamily Tringinæ.

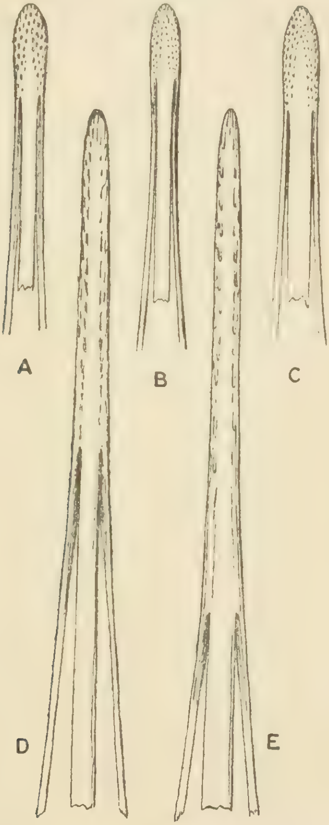
It is not my intention to traverse the reasons which have led to this somewhat astonishing treatment of a bird which has been familiar to ornithologists for centuries, the object of this note being simply to demonstrate that there seems to be no possible sort of question whatever that the Ruff is not a Tringine form, that it is a somewhat specialised Dunlin, and that its proper systematic position is with the Dunlin association or the Eroliinæ.

So far as this note is concerned, the proof of this will rest solely on osteological grounds; but it may be pointed out that in a paper by the author which recently appeared in 'The Ibis' (April 1915, p. 339) on "Coloration as a factor in Family and Generic Differentiation," it was pointed out that the colour-pattern characteristic of the downy nestling of the Ruff, as well as of immature and female examples, was undoubtedly Eroliine in type. I refer to this here, as being a distinct point to the good in favour of colour-pattern as a guide or clue to subfamily or generic affinities, borne out as it is, in this instance, in the most complete and definite way, by an appeal to osteological characters.

In any attempt to decide upon osteological grounds as to which of the aforementioned subfamilies the Ruff ought to be referred, it is obviously necessary to have gained some clear and definite knowledge as to the osteological features which characterise these two subfamilies.

So far as I am aware, these characters have never yet been set forth. I have lately been through all the available material in the British Museum and in the Royal College of Surgeons bearing on this question, and although, unfortunately, it is not so complete as one could have desired, it seems amply sufficient for my immediate purpose. In the following lines, therefore, I propose to make a comparative examination of the osteological features characteristic of the two subfamilies, at the same time pointing out in what particulars the Ruff agrees or disagrees with either one or the other. Owing to want of space this comparative examination will be limited to the skull.

Text-figure 10.



Anterior portion of the skull from above showing the structure of the premaxillæ in:—A. *Ereunetes pusillus*; B. *Erolia alpina*; C. *Machetes pugnax*; D. *Tringa calidris*; E. *Tringa nebularia.*

(1) *Premaxillæ.*—In the Eroliinæ, in the properly macerated skeleton, the distal end of the premaxillæ is seen to be

flattened and slightly spatulate. In a vertical section it would be found to be thin, so that this part of the bill bends easily upwards or downwards when pressure is applied. The foveated or "pitted" region at the anterior end of the premaxillæ is very restricted and has a bifid appearance (*cf.* text-fig. 10 A, B, C). When examined under a magnifying glass these "foveæ" are seen to be either circular or oval cell-like structures. They have a honeycomb-like appearance and they are sculptured *in relief* on the surface of the premaxillæ. In the Scolopacinæ these sculptured honeycomb-like cells are reproduced in a much more perfect and specialised form, and they also occupy a more extensive surface of the premaxillæ.

In the Tringinæ (Redshank group) the distal ends of the premaxillæ are more elongate or pointed. They are stiffer and less elastic, deeper in vertical section, and the circular "foveæ" so characteristic of the Eroliinæ are replaced by slit-like or elongate depressions. In the Tringinæ the foveated extremity occupies a much longer space both actually and relatively (*cf.* text-fig. 10 D, E).

In respect of these characters the Ruff is undoubtedly Eroliine (*cf.* text-fig. 10 C).

(2) In both the Eroliinæ and the Tringinæ the maxillary process of the premaxilla originates on either side as a free-running bar immediately caudad of the posterior limits of the foveated region of that bone; but corresponding to the restricted area of the foveated region in the Eroliinæ the maxillary process has a free and independent existence at a point very conspicuously nearer to the anterior end of the bill than is the case with the Tringinæ (*cf.* text-fig. 10).

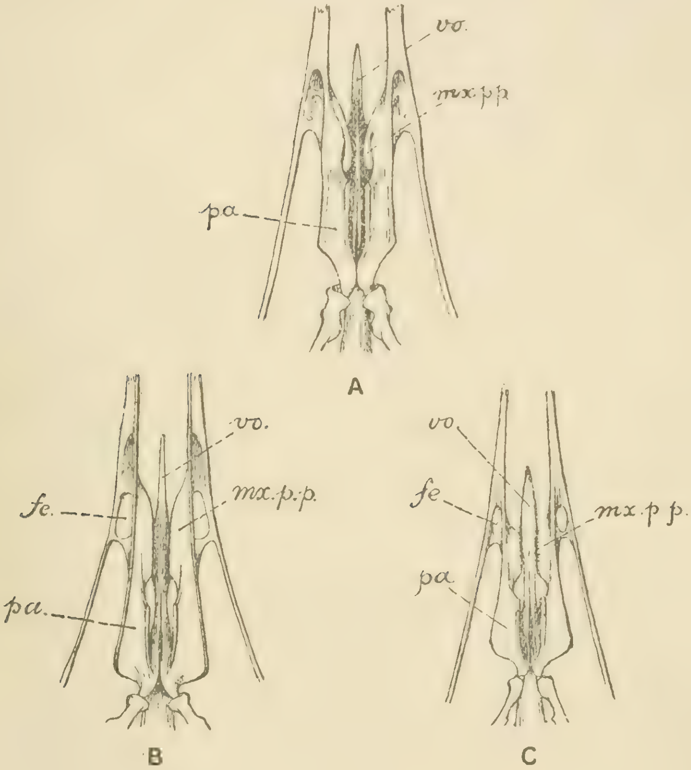
In respect of these characters the Ruff is undoubtedly Eroliine.

(3) *The Palatines.*—In the Eroliinæ the external and posterior margins of the palatal plates form at their junction almost a right angle, the actual angle being somewhat rounded off (*cf.* text-fig. 11 B). In the Tringinæ this postero-external angle of the palatal plate is obtuse (*cf.* text-fig. 11 A). In the Eroliinæ the pterygoid processes of the palatal plates are short, thick, and conspicuously divergent.

In the Tringinæ they are long and ribbon-shaped, and towards the pterygoid articulation tend to be more parallel.

In the Eroliinæ the palatal plates are wider posteriorly than anteriorly. In the Tringinæ the external and internal borders are parallel. In the Eroliinæ the palatal groove is shallower than in the Tringinæ, the inner and outer lamina of the latter being deeper and projecting downwards in a more conspicuous manner. By a reference to the figures

Text-figure 11.



Palatal structure of the skulls of:—A. *Tringa nebularia*; B. *Erolia alpina*; C. *Machetes pugnax*. *fe.* = fenestration of the maxillary plate; *mx.p.p.* = maxillo-palatine process; *pa.* = palatines; *vo.* = vomer.

shown, the palatal plates of the Ruff will be seen to be in respect of all these characters obviously Eroliine.

(4) *The Maxillo-palatine process* in the Eroliinæ is seen to have completely fused with the pre palatal portion of the palatal plate of either side as a thin elongate plate with parallel internal borders devoid of sculpturing.

In the Tringinæ the maxillo-palatine process is observed to extend backwards on either side of the vomer as a very attenuated pear-shaped or sac-like process, which is free throughout the greater part of its course.

In the Ruff the maxillo-palatine process is slightly specialised and, curiously enough, its inner margin is slightly crenated, but, as will be evident from the figure, it is undoubtedly Eroliine rather than Tringine.

(5) In the Eroliinæ the inwardly-projecting plate of the maxillary is fenestrated (*cf.* text-fig. 11 B, *fe.*) as it is in the Ruff. In the Tringinæ this fenestration is conspicuous by its absence, although there are indications of it.

The above characters would appear to be sufficient not only to differentiate between the Eroliinæ and the Tringinæ, constant as such characters are in all the genera and species of either subfamily which I have examined (*cf.* list below), but also to demonstrate the fact that there is no longer any possible excuse for grouping the Ruff with the Tringinæ.

There are, however, other characters serving to distinguish the Eroliinæ from the Tringinæ, and incidentally to clear up the misconception as to the position of the Ruff. These, owing to want of space, we can only refer to very briefly. They are as follows:—

(6) In the Eroliinæ the line of the culmen of the bill makes an obtuse angle (roughly 140°) with the basisphenoidal rostrum. In the Tringinæ the angle made by these two lines is much more obtuse or nearly non-existent. It thus comes about that in the Eroliinæ the line of the culmen forms a slope which is all but identical and continuous with the slope of the line representing the interorbital depression. In the Tringinæ the slope of this

gradually ascending line is rather abruptly interrupted by the much sharper slope of the nasal region.

In respect of this feature the Ruff agrees with the Eroliinæ.

(7) In the Eroliinæ the zygomatic arch or quadrato-jugal rod makes a very distinct angle with the maxillary process of the premaxillæ. In the Tringinæ this angle is hardly observable. In the Eroliinæ the zygomatic rod is relatively as well as actually shorter than in the Tringinæ, and it makes an obtuse angle with the outer process of the nasal. In the Tringinæ this angle is acute. These characters, so far as I have been able to observe with the material to hand, are constant and conspicuous.

In respect of them, however, it is to be noted that the Ruff is more Tringine than Eroliine.

In both the Eroliinæ and the Ruff the outer or descending processes of the nasal bones are very slender and round. In the Tringinæ they are ribbon-shaped or flattened.

(8) The lacrymals, especially as regards their descending processes, differ in the two subfamilies. Want of space forbids a detailed description, but the characters exhibited serve as useful distinguishing factors. The lacrymals of the Ruff are slightly specialised, but agree in their main features with the Eroliinæ, especially as regards the Knot (*Canutus canutus*).

(9) The antorbital plates are differentiated in the two subfamilies, a wider space being apparent in the Tringinæ between their upper margins and the lower surfaces of the lacrymals. In *Heteropygia* this plate practically fuses with the lacrymal.

(10) In the Tringinæ the grooves for the supra-orbital glands in the interorbital space are marginal and quite conspicuous. In the Eroliinæ they are very difficult to make out.

In respect of these alternate characters the Ruff agrees with the Tringinæ.

(11) In the Eroliinæ the post-articular process of the mandible is directed upwards in an abruptly hook-shaped fashion.

In respect of this character the Ruff agrees with the Eroliinæ.

(12) In the Tringinæ, the supra-occipital region, when the skull is viewed from above, forms a somewhat conspicuous and conical projection backwards. In the Eroliinæ the outline of the skull in this region when viewed from above forms an arc of an almost perfect circle. This distinguishing character is a useful and constant one.

Finally, it may be shortly stated that in regard to the systematic position of the Semipalmated Sandpiper (*Ereunetes pusillus*), everything that has been written above bearing on the proper position of the Ruff applies to this form, except that there are no such Tringine deviations such as are given as applying to the Ruff under paragraphs (7) and (10).

It is a most remarkable fact that all the authorities quoted in the opening paragraph of this article include *Ereunetes* with the Tringinæ, whereas it is without question a typical Eroliine form.

Tested by the osteological characters given above, there seems to be no room for doubt that the following forms, whose skulls and other skeletal features I have been able to examine, must be included in the subfamily Eroliinæ:—

> *Erolia alpina alpina*; *Erolia minuta*; *Arquatella maritima*; *Ereunetes** (? *Erolia*) *pusillus*; *Ancylochilus subarquatus*; *Calidris arenaria*; *Heteropygia maculata*; *Micropalama himantopus*; *Canutus canutus*; *Eurynorhynchus pygmæus*; and *Machetes pugnax*.

On the other hand, so far as the material which I have at present been able to examine is concerned, the following forms must be included in the subfamily Tringinæ:—

> *Tringa ochropus*; *Tringa solitaria*; *Tringoides hypoleucos*; *Tringoides macularius*; *Rhyacophilus glareola*; *Tringa calidris*; *T. flavipes*; *T. nebularia*; and *T. stagnatilis*.

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* I can discover no osteological features either in the skull or elsewhere which would seem to justify the creation of a separate genus (*Ereunetes*) for this form.

XXIX.—*Obituary.*

Lord Brabourne.

We regret to have to record the death of Lord Brabourne, who had of late years interested himself so much in the study of Neotropical birds.

Wyndham Wentworth Knatchbull-Hugessen, third Baron Brabourne, was born September 21, 1885, and was the only son of the second Baron and Amy Virginia, daughter of the first Baron Allendale. His grandfather, the first Lord Brabourne, was a well-known politician in the Victorian era, and was raised to the peerage by Lord Beaconsfield.

Lord Brabourne succeeded to the title on the death of his father in 1909, and entered the Grenadier Guards in the following year, passing into the Special Reserve in 1911. Soon after the outbreak of the war he rejoined his regiment, and met his death at Neuve Chapelle on March 12 last.

During his early life, before his father's death, Lord Brabourne spent some years in Paraguay, where he amassed a considerable collection of birds, which he presented to the British Museum on his return in 1908. In 1910 he was elected a Member of the Union, and in the same year he induced Mr. Chubb to join him in the planning and organization of a general work on the Birds of South America. A "List," which was to form Vol. I. of the Series, was completed and published in December 1912 (see 'Ibis,' 1913, p. 315).

In July 1912 Lord Brabourne again left England for South America, where he remained in Peru collecting material for his great undertaking. On the outbreak of the war in August last, he hurried home to rejoin his regiment.

In addition to the "List" already mentioned, Lord Brabourne was the author, conjointly with Mr. Chubb, of the following papers :—

The Nomenclature of the Rheas of South America. Ann. & Mag. Nat. Hist. (8) viii. 1911, pp. 273-275.

A Synopsis of the Genus *Tinamus*. Ann. & Mag. Nat. Hist. (8) xii. 1913, pp. 577–579.

A Key to the Species of the Genus *Crypturus*, with Descriptions of some new Forms. Ann. & Mag. Nat. Hist. (8) xiv. 1915, pp. 319–322.

We must all deplore the loss of this young and enthusiastic brother-member, and sympathise also with his fellow-worker, Mr. C. Chubb. It is very doubtful, we fear, whether it will be possible for the latter to continue unaided the great work which was planned by him and his young and energetic colleague.

Lord Brabourne was unmarried, and the title passes to his uncle, the Hon. Cecil Marcus Knatchbull-Hugessen.

Cecil Macmillan Dyer.

C. M. Dyer, M.B.O.U., Second Lieutenant 4th Battalion Rifle Brigade, was killed in Flanders, while on duty in the trenches, on April 8. Mr. Dyer, the second son of the late Louis Dyer, M.A., of Balliol College, Oxford, and grandson of the late Alexander Macmillan, publisher, was born in Oxford on January 17, 1894. He was educated at Clifton College and at Christ's College, Cambridge, where, at the end of last summer, he had just completed his second year. He had served in the O.T.C. at Clifton and at Cambridge, and when war broke out at once volunteered for the Special Reserve. He obtained early in August a commission in the 6th Battalion Rifle Brigade, and served with his Battalion at Sheerness until the middle of September, when he was transferred to the 4th Battalion, just home from India, and went out to the front with the 27th Division just before Christmas. Though invalided for a time with frozen feet he saw much severe fighting, especially at Neuve Chapelle and St. Eloi, and his senior officers bore warm testimony to his courage and capacity. Mr. Dyer, who was elected a member of the B. O. U. in 1914, had interested himself in the study of birds from his boyhood, and corresponded on the subject with his friend Mr. Warde Fowler. While at Clifton he showed an active interest in ornithology, and when he came up to Cambridge he carried his studies further, and there is no doubt that he would have made his mark as an observer. Mr. A. H. Evans writes :—" He was one of the two leading spirits in ornithology during the time he was in Cambridge, and did a great deal of work in the neighbourhood, chiefly in estimating the number of each species of bird in the various districts and finding out in which spots they bred. He kept careful lists of the results, and his work was most accurate. . . . . . He added a good deal to our knowledge of the birds of remote villages to the west of Cambridge." G. A. M.

Richard Lydekker.

It is with great regret that we record the death of Mr. R. Lydekker, F.R.S., which took place at Harpenden, Herts, on April 16 last. Though never a member of the Union, Mr. Lydekker has been a most active worker for over thirty years in the services of zoology and palæontology.

Born in 1849 of Dutch descent, he was educated at Cambridge, where he took the second place in the first class of the Natural Science tripos of 1871. Joining the Geological Survey of India in 1874, he remained eight years in India, exploring Kashmir, and arranging and cataloguing the large series of vertebrate tertiary fossils obtained by the Survey chiefly in the Siwalik beds; these had then been recently transferred to the Indian Museum in Calcutta.

Soon after his return to this country he became a regular worker in the Natural History Museum, with which institution he remained connected for the rest of his life, though he never sought an official appointment.

Mr. Lydekker's work in zoology naturally falls into two categories—his researches in vertebrate palæontology and his more popular books written chiefly for sportsmen and from the sporting point of view ; these last are mostly concerned with the larger Mammals. He also co-operated with Sir William Flower in 'An Introduction to the Study of Mammals,' an admirable work, and contributed the volume on vertebrates to the third edition of Nicholson's 'Manual of Palæontology.'

His work in ornithology was almost all palæontological. He prepared a catalogue of the fossil birds in the British Museum in 1891, and another of the birds of the Siwalik beds of India (Mem. Geol. Surv. India) in 1885. To 'The Ibis' (1891, pp. 381–410) he contributed a most useful summary of our knowledge of British fossil birds, and later ('Ibis,' 1892, p. 530) a criticism on some work of de Vis on the fossil birds of Queensland and ('Ibis.' 1893, pp. 40–47) on Ameghino's discoveries of the giant *Phororhacos* of the Argentine. In 1909 he issued his 'Sportsman's British Bird Book.'

Mr. Lydekker was elected a Fellow of the Royal Society in 1894, and was awarded the Lyell Medal by the Geological Society in 1902.

HANS GRAF VON BERLEPSCH.

The news has only recently reached us of the death of Graf von Berlepsch, one of the oldest Honorary Members of our Union, and notwithstanding the present sad state of our relations with Germany we cannot pass it over in silence.

It was with the avifauna of the Neotropical region that von Berlepsch chiefly concerned himself. In his ancestral castle, Schloss Berlepsch, near Cassel, he had amassed a very fine and complete collection of South American birds, rivalling most of those contained in the larger national museums. He also had a very complete collection of Humming-birds, with examples of nearly every species mounted in a most artistic manner.

His contributions to ornithology were nearly all concerned with the systematic study of South American birds, and commenced as long ago as the early seventies. A list of them would fill several pages.

He had been a member of the German Ornithological Society for the last forty-five years, and several times served as President. He was elected a Foreign Member of the B. O. U. in 1875, and an Honorary Member in 1890. He died on February 27 last, when in his 64th year.

XXX.—*Notices of recent Ornithological Publications.*

Eaton on the Birds of New York.

[New York State Museum. Memoir 12. Birds of New York. By Elon Howard Eaton. Part 2. Pp. 1–719, pls. 43–106. Albany (University of the State of New York), 1914. 4to.]

This massive volume is the second and concluding portion of a work, the first portion of which, published in 1910, contained an account of the Water-, Shore-, and Game-birds of the State of New York (see 'Ibis,' 1910, p. 740).

The first sixty pages of the present volume are occupied with chapters on ecology, economics, and bird-protection, including the provision of nesting-boxes and of special plantations for sheltering and attracting birds. The rest of the volume is taken up with the systematic descriptions, commencing with the Accipitres, or Raptores as they are commonly called in the United States, and completing the Passeres. No complete synonymy is given beyond a reference to the first description, to Dekay's 'Zoology of New York' (published in 1844), and the A. O. U. Check-list, which is followed throughout as regards classification and nomenclature. It is noticeable that, although descriptions of the species and subspecies as well as diagnoses of the orders and families are given, no attempt has been made to deal with the genera in the same way. The distribution within the State is given at some length, and a paragraph on haunts and habits is in very many cases illustrated by a "half-tone" of the nest and eggs or in some cases of the young bird, which greatly adds to the attractiveness of the volume, though it has unfortunately necessitated the use of a heavily loaded paper, which greatly adds to its weight.

Every species is illustrated on the series of sixty-four coloured plates prepared by the well-known American bird-artist Louis Agassiz Fuertes, and these are perhaps the most attractive feature of the volume. Among them we would specially commend those of the Arctic Three-toed Woodpecker, the Ruby-throated Humming-bird, and a group of Warblers (pl. 94). The duller-coloured birds, such as the Sparrows on plate 83, do not appear to us to be so satisfactory. Whether this is due to the method of reproduction or not it is difficult to say, but on this particular plate, at any rate, the browns are far too rufous ; but, on the whole, the plates are certainly one of the most attractive series of bird-illustrations we have seen for a long time, and we must congratulate the author and the artist on having produced a remarkably handsome volume, which will doubtless serve its purpose as the standard work on the birds of the "Empire State" for many years to come.

Festa on his Collecting Expedition to South Italy.

[Escursioni zoologiche nei monti della Vallata del Sangro (Abruzzi). Dott. Enrico Festa. Boll. Mus. Zool. Anat., Torino, xxx. no. 692, 1915, pp. 1–12. 8 photos.]

In the summer of last year Dr. Festa, who has for some time been making zoological excursions in various countries on behalf of the Turin Museum, proceeded to the rough and high country of the Abruzzi in southern Italy, and made collections of birds and other animals, as well as of plants. In the present paper he gives an account of his travels and of the birds he observed. It is illustrated with some interesting photographs of scenery.

Ghidini on the Waxwing in Italy.

[La comparsa dei Beccofrosoni e di altri uccelli settentrionali nell' inverno 1913–14 nella regione dei tre laghi. Angelo Ghidini. Boll. soc. ticinese sci. nat. Lugano, vols. ix.–x. 1915, pp. 1–8.]

In the winter of 1913–14, as is well known, the Waxwing spread over the greater part of western and southern Europe in unusual abundance. It very seldom comes as far south as Italy, but in this paper Signor Ghidini gives a list of its recorded occurrences in the Italian Lake-districts, as well as some records of other northern birds which also but rarely come so far south.

Grinnell on a new Screech Owl.

[A new Subspecies of Screech Owl from California. By J. Grinnell. Auk, xxxii. 1915, pp. 59–60.]

Mr. Grinnell here describes a new subspecies of Owl under the name *Otus asio quercinus* from the southern and more arid districts of California ; it differs from *O. a. bendirei* from the more humid districts north of San Francisco in its paler coloration.

Gurney's Ornithological Report for 1914.

[Ornithological Report for Norfolk (1914). By J. H. Gurney. Zoologist, 1915, pp. 121–146.]

So far as the occurrence of rare birds was concerned, 1914 seems to have been a disappointing year in Norfolk ; the only events worthy of special notice, according to Mr. Gurney, were a Bluethroat in June, a Grey-headed Wagtail in September, and a Little Bustard in October. The Waxwing invasion of the winter 1913–4 soon spent itself, and none were observed later than April 5.

Cormorants, which Mr. Gurney tells us have not nested in Norfolk since Sir Thomas Browne wrote in the seventeenth century, have recently taken up their quarters on Lord Hastings' lake at Melton, and a pair have brought up a family in an old Heron's nest. We may recall some beautiful slides exhibited at a recent Meeting of the B. O. C. by Miss E. J. Turner illustrating this interesting event.

Although the Spoonbills continue to visit the Breydon mud-flats, they have not yet been induced to follow the example of the Cormorants and breed there. Let us hope that this may come about before long, and that we shall hear that a pair or two of these splendid birds have availed themselves of the opportunities afforded them.

Haagner on South African Birds.

[South African Ornithologists' Union. Bulletin Series. No. 3. A Descriptive List of South African Birds. Part i. (Families Struthionidæ to Scolopacidæ). By Alwin Haagner, F.Z.S. Pretoria, 1914. 8vo.]

This is the first instalment of a list of South African birds with very short condensed descriptions, which it is hoped will enable students of bird-life in South Africa to identify any strange specimens they may meet with. The list is founded partly on Reichenow's 'Vögel Afrikas' and partly on Stark and Sclater's volumes, to both of which works references are given. The present part deals with the Waders, Ducks, and Sea-birds, and will no doubt be found very useful by all South African ornithologists.

Mathews on Australian Birds.

[The Birds of Australia. By G. M. Mathews. Vol. iv. part 2, pp. 81–192, pls. 210–223. London (Witherby & Co.): Feb. 1915.]

This part of Mr. Mathews's work continues the Anseriformes with the genera *Anas*, *Virago*, *Querquedula*, *Spatula*, *Malacorhynchus*, *Stictonetta*, *Nyroca*, *Erismatura*, and *Biziura*, and then proceeds to the Pelecaniformes, as far as the Cormorants are concerned. The author appeals for further particulars of the life-histories of the birds, even of the commoner forms, where the information leaves much to be desired.

He now uses *Anas superciliosa rogersi* for both the eastern and western Australian forms of the Black Duck, and upholds the subspecies against Messrs. Rothschild and Hartert, while he takes the opportunity (pp. 91–93) to animadvert upon what he considers inaccuracies in several other points of their work.

He holds to *Virago* of Newton for *Nettion castaneum* and *N. gibberifrons*, and suggests that the solution of the puzzling question of these two species may be solved by admitting that both sexes of the former, when fully adult, have the metallic green head and chestnut breast, though immature birds probably resemble *V. gibberifrons*, here denominated *rogersi* to distinguish it from the extralimital forms. *Querquedula querquedula* and *Spatula clypeata* are recorded for Australia with great doubt.

The generic name *Erismatura* is used in place of his former choice of *Oxyura*, on account of the priority of *Oxyurus*, and the typical locality of *Biziura lobata* is corrected to West Australia.

The Pelecaniformes are prefaced by a long and thorough discussion of families and genera. Mr. Mathews tells us that he is a great genus-splitter, and his views are well worthy of consideration ; but the majority of ornithologists may possibly not proceed to such extremes. In this part, however, we are only concerned with the Cormorants, which are placed under the genera *Phalacrocorax*, *Stictocarbo* (not Australian), *Mesocarbo*, *Hypoleucus*, and *Microcarbo*. The author considers *P. filamentosus* of China and Japan, =*P. capillatus*, equivalent to *Pelecanus sinensis* of Shaw and Nodder ; he gives his ideas of the subspecies of *Phalacrocorax carbo*, proposing therewith a new form—*P. c. indicus*. We hope Mr. Mathews will make his printer spell *Phaëthon* properly in the next part ; no one would recognize our mythological friend as *Phæthon*, nor did our fathers drive in phæthons.

Miller on the Bird's Wing.

[Notes on Ptilosis, with special reference to the Feathering of the Wing. By W. De W. Miller. Bull. Amer. Mus. N. H. New York, xxxiv. 1915, pp. 129–140.]

Mr. Miller during recent years has had the opportunity of examining many specimens of birds in the flesh which have reached the American Museum from the New York Zoological Park and elsewhere, and in this paper he records his observations on various points of external anatomy, especially in those cases where he has found himself in disagreement with previously published statements.

A useful list is given of those birds which possess or do not possess the fifth secondary, a condition for which the somewhat cumbrous terms of eutaxy and diastataxy or quintocubitalism and aquintocubitalism have been used. He finds that *Philohela*, the American Woodcock, differs from *Scolopax* and all other members of the Gull-Plover group in being eutaxic (*i. e.* having the 5th secondary present).

Finally, a list is given of those groups of birds which are universally eutaxic or diastataxic, and those such as the Pigeons and Kingfishers which contain birds with both forms of wing.

Another point dealt with is the number of metacarpal primaries, which are six in all groups except the Grebes, Storks, Flamingoes, and Rheas, all of which possess seven.

The condition of the first primary covert, which is reduced in size in many forms, the presence of the vestigial eleventh primary, the alula, the outermost primary covert, the number of rectrices, and the presence or absence of the tuft on the oil-gland are all discussed. Finally, an interesting correction is made in regard to the Osprey (*Pandion*). It has always been stated that in this bird the feathers are without an aftershaft, and on this account they have been placed in a family distinct from the other Accipitrine birds. If Mr. Miller is correct in his observations that a distinct aftershaft is present, this matter will have to be reconsidered.

Moulton on the Birds of Borneo.

[Hand-List of the Birds of Borneo. By J. C. Moulton, Curator of the Sarawak Museum. Journ. Straits Branch R. Asiatic Soc., No. 67, 1914, pp. 125–191.]

Mr. Moulton has compiled a useful list of the birds of Borneo, which now number 555. The classification and general arrangement follow Sharpe's 'Hand-List,' but subspecies are indicated where necessary, and the subspecific names are printed in italics with the "authorities" for both the specific and subspecific names. This makes five words necessary to indicate a single item, thus:—*Caloperdix oculea* Temm. *borneensis* Grant, a rather cumbersome addition to an already overloaded system of nomenclature.

No distributional notes are given, but so far as it is possible the name and date of the first collector and recorder are mentioned, the latter referring to an ample bibliography of 231 titles.

The list is prefaced with a short account of the ornithological history of Borneo. The earliest collectors were the

Dutchmen Diard (1826) and Salomon Müller (1836), while the north of the island remained quite unexplored until the arrival of Sir James Brooke in 1839 and his installation as Rajah in 1842. The earliest list of Bornean birds is that of Hugh Low, which forms an appendix to his book 'Sarawak: its Inhabitants and Productions,' published in 1848. This list contains the names of only 59 species of birds.

Robinson on Ringing Larus ridibundus.

[Report on the results of Ringing Black-headed Gulls. By H. W. Robinson. British Birds, viii. 1915, pp. 209–218.]

During the five years 1909–1913 Mr. Robinson has marked large numbers of nestlings of the Black-headed Gull, in order to trace their movements after leaving their parents' care. The greatest numbers have been ringed at the well-known gullery at Ravenglass, in Cumberland. Here 8096 were marked, and 345 have been recovered. On the whole, the movement of the birds may be described as a general scattering with a decided southward tendency along both our west and east coasts. Outside the home quarters, which are reckoned as from Solway to Dee, the largest percentage of recoveries were made on the corresponding portion of the east coast between Berwick and Humber. A few birds strayed to the north and west coasts of France, and three as far as the coast of Portugal.

Salvadori on the History of the Turin Museum.

[Notizie storiche intorno alla collezione ornitologica del Museo di Torino raccolte da Tommaso Salvadori. Mem. R. Accad. Sci. Torino (2), lxv. no. 5, 1915, pp. 1–49.]

For fifty years since 1864 Count Salvadori has had charge of the collection of birds in the Turin Museum. Since that date the number of specimens in the Museum has increased from 5398 to over 21,000. Among these are the types or cotypes of 297 species, and examples of four extinct species, *Alca impennis, Conuropsis carolinensis, Ectopistes migratorius,* and *Fregilupus varius*, while two others, *Dromæus ater* and *Heteralocha acutirostris,* are marked as doubtfully so.

In the present memoir Salvadori gives a historical survey of the growth of the Museum, commencing at 1811, when Bonelli became the Director. He was succeeded by Giuseppe Gené in 1832, who remained in charge until Salvadori himself succeeded him in the care of the collection of birds in 1864. Since that date the number of specimens has been augmented not only by acquisitions from special expeditions, but by gifts and judicious exchanges with other Museums, and it is in this manner that the large numbers of types and cotypes have been acquired.

This memoir will be of great value to all who are occupied in the monographs of special groups, and who wish to find out where certain of the older types are preserved.

Salvadori's recent minor Notices.

[Il *Podicipes infuscatus* Salvad. T. Salvadori. Boll. Mus. Zool. Anat. Torino, xxx. no. 694, 1915, pp. 1–3.]

[Un' Aquila dell' Africa Settentrionale. *Id. ibid.* no. 700, 1915, pp. 1–2.]

[Intorno ad alcuni uccelli del Kasai. Breve nota di T. Salvadori. Ann. Mus. Civ. Stor. Nat. Genova, xlvi. 1915, pp. 279–280.]

In the first of these short notes Count Salvadori draws attention to the fact that the Great Crested Grebe of the Ethiopian region differs from that of Europe in certain well-marked characters, and that it must be known in future as *Podicipes infuscatus* Salvadori. This name was first given to an example from southern Abyssinia by Salvadori himself in 1884, though he did not at that time realize that this distinct form extended to southern Africa.

In the second note an Eagle obtained in Tripoli, now in the Turin Museum, is identified with *Aquila occidentalis* Olphe-Galliard. This is a form of the Golden Eagle found in Spain and northern Africa. In the recently issued number of Hartert's 'Palæarctic Birds,' which has not yet reached us, this is shown to be identical with that described by Brehm (*in litt.*), and which was subsequently published by Olphe-Galliard (Faune orn. Eur. occ. ii. fasc. 18, 1889, p. 23 : Spain).

The third paper contains the names of twenty-four species of birds collected in the Kasai Province of the Belgian Congo by a mining engineer, A. Crida, and sent to the Genoa Museum. No new species are described.

Miss Sherman on Feeding Humming-birds.

[Experiments in feeding Humming-birds during seven summers. By Althea R. Sherman. Smithsonian Report, Washington, for 1913–1914, pp. 459–468.]

In this paper Miss Sherman gives a most interesting account of a long series of feeding experiments with wild uncaged Ruby-throated Humming-birds (*Archilochus colubris*) at her home in Iowa.

Artificial flowers, such as nasturtiums or tiger lilies, with a bottle attached filled with granulated sugar dissolved in water, were fixed at different positions in the garden or "yard," and were for many successive summers visited by the Humming-birds.

Among the many interesting results noticed was that the birds, when they had learnt about the artificial flowers and their supply of syrup, neglected all the real flowers in the garden. It is believed that the birds which did occasionally visit the real flowers were all migrants, and that the same breeding individuals returned to the garden year after year. The birds usually arrived in May but did not become "regular boarders" until July. Miss Sherman believes that during June they were busy with their incubation duties, some two or three miles away in the woods. Only females came to the bottles, and the males appear to be very much scarcer than the females. By a careful series of measurements and weighings it was deduced that one of these little birds consumed in one day twice its own weight of sugar.

The paper, which is of very considerable value, is well worth perusal. It was first read at the Annual Meeting of the A. O. U. in New York, and has also been published in the Wilson Bulletin, published at Oberlein, Ohio.

Shufeldt on the Passenger Pigeon.

[A unique photograph—The last Passenger Pigeon. By R. W. Shufeldt, M.D. The Blue-Bird Magazine, vol. vii. 1915, pp. 85-86.]

[Anatomical and other notes on the Passenger Pigeon (*Ectopistes migratorius*), lately living in the Cincinnati Zoological Gardens. By Dr. R. W. Shufeldt. Auk, xxxii. 1915, pp. 29-41, pls. iv.-vi.]

As has already been noticed in our pages, the last known living Passenger Pigeon died from old age on Sept. 7, 1914, at the Cincinnati Zoological Gardens. It had been bred in the Gardens, and was about 29 years old when it died. The body was immediately dispatched to the National Museum at Washington, and to Dr. Shufeldt was entrusted the task of making an examination of its anatomy, after it had been carefully skinned by Mr. Wm. Palmer. In the second of the papers listed Dr. Shufeldt writes an account of the results of the dissections which he made. These seem to confirm what was previously known of the bird's anatomy, an account of which had previously been written by William Macgillivray, and published in Audubon's great work on American birds.

In the first paper quoted will be found a reproduction of a photograph in colours of the same bird, taken by Dr. Shufeldt after its death. The magazine in which it appears is the organ of the Audubon Educational Board for Ohio cooperating with the National Association of Audubon Societies for the study and protection of North American bird-life.

Thorburn's British Birds.

[British Birds, written and illustrated by A. Thorburn, F.Z.S., with eighty plates in colour, showing over four hundred species. In four volumes. Vol. i. pp. viii+143, 20 pls. London (Longmans), 1915. 4to. £6 6*s*. for 4 vols.]

This is the first of four volumes in which Mr. Thorburn proposes to give us a collection of pictures of our British birds, and as the plates are admittedly the most important part of the work we will deal with them first.

Each plate contains representations of from three in the case of the larger, to eight or nine in the case of the smaller species ; as far as possible allied species appear on the same plate, and all the birds on the plate are drawn to scale, two-thirds life-size for the smaller to one-third life-size for the larger species. Most of the birds are depicted with appropriate backgrounds or surroundings, so that there appears to be some little confusion to our eye on some of the plates. The reproduction of the original drawings, which has been carried out by some form of three-colour process, certainly seems very perfect, though it is difficult to judge of this without a comparison with the original sketches. As for the pictures themselves, they combine great artistic merit with a most accurate representation of the birds, not only as to form and colouring, but as to attitude and general characteristics, and we believe that this work will certainly enhance Mr. Thorburn's reputation as our leading bird-artist. Our only criticism is that the plumage of every bird is in such a pink of perfection as is seldom seen in real life.

The letterpress is designedly subordinate to the pictures. It consists of short notes on the distribution and habits of each species, supplemented by such observations as have been made by Mr. Thorburn himself during his many years of bird-painting. The classification and nomenclature of Howard Saunders's 'Manual' is generally followed, and the present volume contains the descriptions and figures of all the Passerine birds except the Larks.

We congratulate Mr. Thorburn on the completion of his first volume, and shall look forward eagerly to the appearance of the other three. The only work which can in the least compare with the present one is Lord Lilford's 'Coloured Figures of the Birds of the British Isles,' which was published many years ago ; the last part was issued in 1897 ; two editions were, we believe, exhausted before the final part was issued. We wish Mr. Thorburn equal success.

Wetmore on a new Hawk from Porto Rico.

[A new *Accipiter* from Porto Rico, with notes on the allied forms of Cuba and San Domingo. By Alex. Wetmore. Proc. Biol. Soc. Washington, xxvii. 1914, pp. 119–122.]

The title of this paper sufficiently shows its contents. The new form described is *Accipiter striatus venator*, and is closely allied to *A. s. striatus* of San Domingo, formerly known as *A. fringilloides* Vigors. Perhaps we may be allowed to add that it seems somewhat rash to distinguish a new subspecies of Hawk from the examination of a single example.

White on Birds from Central Australia.

[Scientific Notes on an Expedition into the Interior of Australia, carried out by Capt. S. A. White, M.B.O.U., from July to October 1913. Trans. R. Soc. S. Australia, xxxviii. 1914, pp. 407–474, pls. xxi.–xxxix. and maps.]

Capt. S. A. White has recently made a very interesting journey to the desert centre of Australia, rendered classical by the anthropological researches of Prof. Spencer and Mr. Gillen. Leaving Adelaide in July 1913, accompanied by his wife, he travelled from rail-head 1300 miles on camel-back, exploring the MacDonnel ranges and the country round Alice Springs. His primary object was to obtain birds and assist Mr. G. M. Mathews in his work on Australian birds, but he also collected in other branches of zoology. The present report contains a narrative and an account of the birds by Capt. White himself, together with that of the other groups and on the botany by other specialists.

About a hundred species of birds were met with and are duly listed in this report with interesting field-notes; the nomenclature followed is that of Mr. Mathews, but no new forms are here described, nor are there any critical or taxonomic notes. These will no doubt appear when the collection is examined by Mr. Mathews.

Capt. White is to be congratulated on having performed a most successful expedition into what is undoubtedly one of the most arid and forbidding tracts of country on the face of the globe.

Cassinia.

[Cassinia. A Bird Annual. Proceedings of the Delaware Valley Ornithological Club of Philadelphia. No. xviii. for 1914, 1915, pp. 1–80.]

There is always a scholarly and literary flavour about 'Cassinia' which makes it quite the pleasantest of the American bird-magazines. This is perhaps due to the fact that at Philadelphia the foundations and early traditions of American scientific culture centre. We believe that the American Philosophical Society is the oldest scientific body on the western continent, while the Academy of Natural Sciences possesses the finest scientific library; both these institutions are located at Philadelphia.

The present number of 'Cassinia' opens with interesting reminiscences of some old Philadelphian collectors and taxidermists by Mr. Spencer Trotter; this is followed by an article on bird-observation on the lower reaches of the great Delaware river and some speculations on the causes of the movements and habits of Gulls by Mr. John Carter, while Mr. G. S. Morris sends a somewhat similar contribution on the birds of Tacony creek, which lies only just beyond the suburbs of the city. Mr. Henry Oldys points out in an interesting paper what an infinite variety there is in the song of individual birds, and gives, reduced to musical notation, eleven different variations—out of 118 others recorded in his notebooks—of that of the Meadow-Lark (*Sturnella magna*). The usual "Report on the Spring Migration," compiled by Mr. Witmer Stone, forms the concluding article of this excellent volume, which should certainly be much more widely known on this side of the Atlantic than it appears to be.

The Condor.

[The Condor. A Magazine of Western Ornithology. Vol. xvi. nos. 1–6, 1914.]

The volume of 'The Condor' for last year contains a large number of articles dealing with subjects chiefly of local interest to the ornithologists of the western United States.

As is usual, it is illustrated almost entirely by photographs taken by the writers of the articles, and many of these are of very high merit. It is impossible to do much more than mention some of the more important contributions in a short review of this nature.

Dealing with single species, Mr. H. J. Rust writes on the nesting of the Sharp-shinned Hawk (*Accipiter velox*) in Idaho, illustrating his notes with a very good series of photographs showing the gradual development of the young birds up to the age of 23 days, when they are already able to fly and have lost most of their original downy covering. Similar papers by Mr. J. B. Dixon on the history of a pair of Pacific Horned Owls (*Bubo virginianus pacificus*) in San Diego Co., California, by Mr. D. R. Dickey on the nesting of the Spotted Owl (*Strix occidentalis*) in Ventura Co., California, and by the Treganza brothers on the Snowy Heron (*Ardea candidissima*) in Utah are also well illustrated.

Of local lists Mr. G. Willett writes on the birds of Sitka, Alaska, Mr. S. G. Jewett on birds from Netarts Bay, Oregon, Mr. A. A. Saunders on the birds of Teton Co., north Montana, and Mr. H. A. Edwards on birds from the Sierra Madre in southern California.

The only article dealing with birds outside the Nearctic region is that of Mr. A. van Rossem on the life-history and breeding-habits of the Derby Flycatcher (*Pitangus sulphuratus derbianus*) in San Salvador, Central America. During a short excursion to Fryppe, at an elevation of 3700 ft. in the Sierras of California, Mr. M. S. Ray was fortunate enough to find the nest and eggs of the Hermit Warbler (*Dendroica occidentalis*), one of the rarest of all the western Warblers, as well as those of the Sierran Hermit Thrush (*Hylocichla guttata sequoiensis*) and the Saw-whet Owl (*Cryptoglaux acadica*).

Mr. J. E. Thayer gives us some information about the nest and eggs, probably the first authentic ones taken, of the Kittlitz Murrelet (*Brachyramphus brevirostris*), which he obtained from Pavloff Bay in the Alaska Peninsula.

An interesting study of the Rock-wren (*Salpinctes obsoletus*) is contributed by Mr. H. S. Swarth. The typical form is a wide-spread type, ranging from the Great Plains region east of the Rockies to the Pacific, and from the floor of the hottest desert to the summit of the coldest mountain-top without appreciable variation; when we come to the islands off the coast of southern and lower California, though the birds on most of the islands conform to the mainland types, we find that one subspecies is distinguishable—*Salpinctes o. pulverius* from San Nicolas and San Clemente Islands. Another new subspecies is here described, *S. guadeloupensis proximus*, from the Island of San Martin, off the coast of Lower California.

Of papers of economic interest, Mr. H. C. Bryant contributes an important one dealing with a survey of the breeding-grounds of Ducks in California, Mr. A. B. Howell one on the destruction of small birds caused by the fumigation process to which the trees in the citrus orchards of California are subjected to clean off black scale, and Mr. C. H. Kennedy one on the effects of irrigation on bird-life in the Yukima Valley in Washington State.

Journal of the S. Afr. Orn. Union.

[The Journal of the South African Ornithologists' Union. Edited by A. K. Haagner, F.Z.S. Vol. x. no. 1, Dec. 1914. pp. 1-46.]

Doubtless on account of the war the annual volume of the South African Ornithologists' Union is somewhat diminished, and consists of one thin number only. There are included in it field-notes on birds of the Zimliti district near Beira and of the Sabi district of the Transvaal by Mr. P. A. Sheppard and Capt. C. Ingle respectively, while the editor, Mr. Haagner, contributes some notes on the Game- and Water-Birds of the Pretoria bush-veld made during a recent hunting-trip of only eight days' duration, when he found evidence of the breeding of the White-faced Duck (*Dendrocygna viduata*), a species previously unknown to nest in South Africa. He met with the Knob-billed Duck (*Sarkidiornis melanotus*) breeding in the pools of the Crocodile River. This Duck's most southerly breeding-ground was previously believed to be Lake Ngami. Other articles are by Mr. B. C. R. Langford on a curious plumage-variation in a Lanner (*Falco biarmicus*), and on the breeding of the Kurrichaine Button-Quail (*Turnix lepurana*) by Mr. Mörs. Finally, we must congratulate Mr. Haagner on his promotion to the post of Director of the Zoological Gardens in Pretoria.

Yearbook of the Dutch Bird-Club.

[Club van Nederlandsche Vogelkundigen. Jaarbericht, no. 4. Deventer, 1914.]

Under its energetic President, Baron Snouckaert van Schauburg, the Dutch bird-club occupies itself chiefly with matters of local importance in Holland. The President himself gives us his usual report on the occurrence of rare birds in the Netherlands between Oct. 1913 and Sept. 1914. It does not seem yet certain whether the British Song-Thrush occurs in Holland or not. In another short note he discusses the identification of the Little Owl of Palestine, and comes to the conclusion that two examples in his collection obtained near Jerusalem should be referred to *Athene noctua glaux*, the Egyptian subspecies, rather than to Hartert's *A. n. lilith*, which is said by the last-named author to inhabit Syria, Palestine, and Mesopotamia. Another article by Baron Snouckart deals with a pleasant five weeks ramble through Italy with notes on the birds observed.

The only other contribution of any length is one by M. A. Crèvecoeur on the avifauna of the Hague and its neighbourhood, accompanied by a map and topographical information. The number of species recorded is 146.

List of other Ornithological Publications received.

Buterlin, S. A. Birds of the Ussuri-land. And other papers from Russian periodicals.

Moulton, J. C. Thirteenth Report on the Sarawak Museum, 1914. (Sarawak, 1915.)

The Auk. (Vol. xxxii. No. 2. Cambridge, Mass., 1915.)

Avicultural Magazine. (Third Series, Vol. vi. Nos. 6–8. London, 1915.)

Bird Notes. (New Series, Vol. vi. Nos. 4–6. Ashbourne, 1915.)

British Birds. (Vol. viii. Nos. 11–12. London, 1915.)

California Fish and Game. (Vol. i. No. 3. San Francisco, 1915.)

The Condor. (Vol xvii. Nos. 2, 3. Hollywood, Cal., 1915.)

The Emu. (Vol. xiv. pt. 4. Melbourne, 1915.)

The Irish Naturalist. (Vol. xxiv. Nos. 4–6. Dublin, 1915.)

Journal of the Federated Malay States Museums. (Vols. v. No. 3; vi. No. 1. Kuala Lumpur, 1915.)

Messager Ornithologique. (1915, No. 2. Moscow, 1915.)

Report of the Poultry Expert (South Australia) for the Year 1913-14. (Adelaide, 1915.)

The Scottish Naturalist. (Nos. 40–42. Edinburgh, 1915.)

The South Australian Ornithologist. (Vol. ii. pt. 2. Adelaide, 1915.)

XXXI.—*Letters, Extracts, and Notes.*

The following letters have been received :—

Messrs. Cockerell and Thorpe.

Sir,—My attention has been called to a paper by Mr. G. M. Mathews, "A recent Ornithological Discovery in Australia," published in 'The Ibis' for January 1915. On p. 80 Mr. Mathews, in recording the names of the collectors who "have touched at Cape York," mentions those of Messrs. Cockerell and Thorpe. He says :—"These collectors, who must stand in the forefront of careful and accurate workers as regards the acquisition and preparation of bird-skins, thought that by the falsification of localities they might obtain better prices for their goods; they therefore made an expedition to some islands to the north of Australia, probably the Aru group, where they made a magnificent collection, and then palmed these off mixed with true Cape York birds as having been all procured at Cape York. This collection, purchased by Messrs. Godman and Salvin, and later presented to the British Museum, has been a source of endless trouble, and the only scientific course would have been to have rejected it entirely."

With Mr. Cockerell I have nothing to do, I knew him not, but of Mr. J. A. Thorpe, late taxidermist to this Museum, I necessarily knew a good deal; he was not only a true and faithful servant of the Trustees for thirty-eight years, but, so far as his history is known to a very wide circle of friends here, was never at or near the Aru Islands. As a matter of fact, Mr. Thorpe's collecting was, at the period in question, confined to the Cape York Peninsula. In the second place, a large portion of his collection was purchased by the Australian Museum Trustees of the day, through the then Curator, Mr. Gerard Krefft, and the skins forming this collection are still in evidence here.

Now, in Mr. Mathews's remarks there is, to put it mildly, a distinct libel on the memory of a dead man, who, I know, from my association with him, would have been the last to perpetrate, or assist in perpetrating, what would have been nothing more or less than a common swindle.

It is not to be supposed for a moment that a keen naturalist, like Mr. Krefft, would have neglected the opportunity of acquiring, for his Trustees, such valuable material, at that time, as bird-skins from the Aru Islands. As a matter of fact, all the skins purchased from Mr. Thorpe on his return from Cape York, and before he became officially connected with this Institution, are true local species.

For the honour of my late friend, and the good name of the Australian Museum, I cannot allow Mr. Mathews's statement to go forth without uttering this protest.

I am, Sir,
Yours faithfully,
R. ETHERIDGE, Jun.

The Australian Museum,
Sydney.
March 16, 1915.

The Black-throated and Black-eared Wheatears.

Sir,—In the Bulletin of the B. O. C. for the March meeting, p. 89, I notice that Dr. Hartert invites a discussion on the question of the specific distinctness of the Black-throated and Black-eared Wheatear, giving five main reasons why they should be considered as one species having a dimorphic phase in the males. The facts as he states them are obviously correct, and hence, presuming there is no further evidence at hand, the subject becomes merely one of opinion. The main question of importance in this case seems to me to be not so much whether they are or are not the same species, but how a certain group of birds showing in the males very obvious and well-marked differences, may be most conveniently distinguished. The chief object of all systematic work should be to so arrange and name the various varieties and forms of animal life that they may be conveniently classified and recognised without having recourse to long and verbose descriptions. To consider these two forms as one species is therefore simply to prove a very plain and obvious fact, so that if I was only to find Black-throated males in one locality, I should not be able to convey the fact without going into a description. That being so, it becomes necessary to consider by what accepted means of classification they can be named. They cannot be designated by simple trinomials as (save in very exceptional cases) a trinomial implies a geographical variety, and two geographical varieties cannot have the same breeding area. If they are considered as the same species, we have to fall back on the cumbersome quadrinomial, viz., *Œnanthe h. hispanica* var. . . . . . . , which is the only logical solution if they are considered as the same species; if, however, we consider them as two different species, all difficulties disappear.

Is there any absolute proof that they are one species? Before we can answer that, we must, I think, try and define a species. We all know, or think we know, what a species is, but I have met nobody yet who could give an accurate definition which would cover all cases, and that for the very simple reason that "species" is merely a very convenient term founded by systematists to enable us to arrange and classify animal and plant life, but it is not a natural division. Some forms are so far differentiated that it is easy to call them different species; others are in process of differentiation, and to recognise these we fall back on the term "subspecies." Others, again, as in the case of these Wheatears, are perhaps evolving by what is known as discontinuous variation, and our system has no recognised means of dealing with it.

If we go down to derivations we find that the word "species" in the zoological sense is probably cognate to the old word, which referred to "money paid by the tale," and we read in Skeat that this was "probably by confusion with the Latin ablative specie, as if paid in specie = equals paid in *visible* coin." (The *italics* are mine.) We have therefore considerable evidence to show that "species" referred to forms that were *visibly* different, as for example in the case of these two Wheatears.

Dr. Hartert has not given us any instance of these two forms interbreeding, and I doubt if any evidence exists as yet, for it would be necessary to take the young alive from various nests of which the parents were known and see if both forms of male were found in the same nest and the proportions of each form; when this has been done we shall be in a better position to understand the true meanings of these forms, and a steady advance in our knowledge will have been made. Till then there may be much to be said on both sides, but nothing that can prevent it remaining a matter of convenience and opinion.

I am, Sir,
Yours faithfully,
J. Lewis Bonhote.

Government Zoological Gardens, Giza,
Nr. Cairo, Egypt.
May 27, 1915.

Conserve the Collector.—Mr. Joseph Grinnell, of the California Museum of Vertebrate Zoology at Berkeley, California, has sent us a copy of an article recently contributed by him to 'Science' (vol. xli. pp. 229–232) under the above title. He states that in America the type of field observer who depends solely on long range identification is becoming more and more prevalent, but that the opera-glass student even if experienced cannot be depended upon to take the place of the collector. Accuracy of identification of species and especially of subspecies rests for final appeal upon the actual capture and comparison of specimens. Ornithology as a science is threatened, and it should not be allowed to lapse wholly into the status of a recreation or a hobby to be indulged in only in a superficial way by amateurs or dilettantes.

The movement against collecting and collectors and the restrictions in regard to obtaining permits for collecting for scientific purposes have perhaps become more acute in the United States than they have in England. Here game-laws and the possession of large tracts of land by single owners have prevented the great destruction of bird-life, and especially of game-birds, which has taken place to so great an extent of late years in America. Still one notices a strong tendency in the same direction in England. There can be no doubt that observation with glasses and camera-work must be combined with collecting and skinning to form a good field ornithologist, and we would strongly endorse Mr. Grinnell's plea for the "conservation of the collector."

Notice to Members.—It is proposed to publish a list of all the Members of the Union who have been or are serving in any branch of His Majesty's Forces during the present war.

The Editor will be much obliged if Members will forward their names, as well as those of any of their friends who are Members, with details of rank and regiment or ship and where serving, to him at 10 Sloane Court, London, S.W. It is hoped to print a preliminary list, at any rate, in the October number of 'The Ibis.'

Notice to Members.—Many Members of the Union have not yet returned the new Banker's Order Form for the increased subscription which was recently circulated, and the Secretary will be much obliged if they will kindly do so at their earliest convenience, as the work of registering and forwarding the forms to their respective banks is being greatly delayed.

THE IBIS.

TENTH SERIES.

Vol. III. No. 4. OCTOBER 1915.

XXXII.—*Report on the Birds collected by the late Mr. Boyd Alexander (Rifle Brigade) during his last Expedition to Africa.*—Part V. *List of the Birds obtained in the Manenguba Mountains (Cameroon).* By David A. Bannerman, B.A., M.B.O.U., F.R.G.S.

Part V. concludes the Reports on the collections made by Boyd Alexander during his last journey. Many interesting species are dealt with, and the collections, both from the islands and mainland, have proved of immense value.

I should like to take this opportunity of thanking Mr. Ogilvie-Grant for allowing me to describe these valuable collections—a labour which has taken me the best part of a year to accomplish—and for much help and advice which he has given me.

A perusal of Boyd Alexander's diary of his last journey throws a certain amount of light on the character of the country through which he passed between Cameroon Mountain to the Manenguba Range (see map, Pl. VI.). From it one gathers that, after leaving Buea, the road passes first through cacao-plantations; then, from Ediki to Malende and on to Kumba, a track leads through magnificent forest, where some very fine timber is to be seen; and finally, as one nears Ninong, the enclosed country gives way to undulating and hilly grass-land with little clusters of trees in the hollows. Ninong is a large town, situated at the north-western base of the Manenguba Mountains.

A two and a half hours' trek from Ninong brings one to Poala, and an hour's walk from that village to the Manenguba Crater Lakes. Concerning these Alexander writes:—"They are close to one another and are called 'Edip' by the natives, *i. e.* 'the two Sisters'—the larger is about a kilometre in diameter, the smaller about half that size and almost emerald-green in colour. Unlike the crater-lake at Kumba, the sides of these are not wooded, but have steep grass-slopes reaching to the water's edge. These two lakes lie at the south-east end of a remarkable natural arena, formed by picturesque grass-hills, 300 to 400 feet in height. The centre is flat, covered with long grass, and about two miles in diameter. The lakes lie at an altitude of 6300 feet."

In the wood near the village of Poala, Alexander met with three or four species hitherto supposed to be confined to Cameroon Mountain or Fernando Po, where he had already procured them. These were *Nesocharis shelleyi*, *Linurgus olivaceus*, *Cinnyris preussi*, and *Saxicola salax pallidigula*.

A specially interesting species is the Weaver-Finch, *Sitagra anochlorus*, described by Dr. Reichenow from a female obtained at Yakoma on the Wellé River. This species is new to the British Museum collection, and the series includes an example of the adult male, hitherto unknown.

Alexander notes that a well-wooded range of hills about 4000 feet in height connects the Manenguba Range with the Cameroon Mountain, commencing about two miles from Ninong and running in a south-westerly direction. This ridge no doubt accounts for the similarity of the highland fauna in the two districts.

The Manenguba Range, with the birds of which this paper deals, lies some distance from the coast of Cameroon and about 84 miles north-east of Victoria (*vide* map, Plate VI., July number).

Having completed his explorations on Cameroon Mountain, Alexander left Buea on the 21st of May, 1909, and began his long journey into the interior which terminated so fatally with his murder on the 2nd of April, 1910, at Ilarné, French Equatorial Africa.

During his journey from Buea to Manenguba, Alexander does not appear to have done any collecting—at any rate, no birds were sent home from there, and his diary shows no entry of any having been obtained. The collection from Manenguba comprises 80 specimens referable to 43 species and subspecies, almost all of which were procured in the neighbourhood of Ninong.

After leaving this district only one bird appears to have been obtained, namely *Lagonosticta dybowskii,* an example of which was shot at Bafum Bum. If any other specimens were secured, they were subsequently lost, but none are recorded in Alexander's diary, which contains an accurate account of every bird obtained.

Systematic List.

1. **Francolinus bicalcaratus.**

Francolinus bicalcaratus Linn. Syst. Nat. 12th ed. 1766, i. p. 277 : Senegal.

a, b. ♂ ♀ ad. (Nos. 1, 2). Manenguba Mts. 28. v. 09.

F. bicalcaratus is a well-known West African species. Specimens in the British Museum are from Casa Blanco, Senegal, Gambia, Gold Coast (Accra), Northern Nigeria (Ilorin and Shonga), as well as the two birds now recorded from Cameroon.

The birds obtained in the Manenguba district are not the first specimens obtained from south of the Niger River, Reichenow having recorded the species from eastern Cameroon in the districts of Baunso, Banjo, and Garua.

2. **Gallinula chloropus meridionalis.**

Gallinula c. meridionalis Brehm, Vogelf. 1855, p. 331 ; Bannerman, Ibis, 1915, p. 116.

a. ♂ ad. (No. 1). Manenguba Lake. 2. vi. 09.

This is an example of the small African Moorhen, which has, for so long, been confused with the typical European form.

3. Podiceps ruficollis capensis.

Podiceps capensis Salvad. Ann. Mus. Civ. Gen. (2) i. 1884, p. 252: South Africa.

a. ♀ ad. (No. 1). Manenguba Lake. 29. v. 09.

A single specimen of the African Little Grebe was obtained.

4. Colius striatus nigricollis.

Colius nigricollis Vieill. Nouv. Dict. d'Hist. Nat. vii. 1817, p. 378 : Malimbe*.

a. ♀ ad. (No. 2). Ninong, Manenguba Mts. 28. v. 09.

I have remarked in my previous paper (Ibis, 1915, p. 485) that *C. s. nigriscapalis* Reichenow cannot be upheld. The bird from the Cameroon highlands must be united with *P. s. nigricollis*.

5. Centropus monachus fischeri.

Centropus fischeri Reichw. Journ. für Orn. 1887, p. 517 : Niaktaschi, N.E. Victoria Nyanza.

a. ♀ ad. (No. 2). Ninong, Manenguba Mts. 28. v. 09.

See my remarks on the bird of this species obtained by Alexander on Cameroon Mt. (Ibis, 1915, p. 486).

6. Buccanodon duchaillui.

Barbatula duchaillui Cass. Proc. Acad. Philad. 1855, p. 324 : Moonda River, Gaboon.

a. ♀ ad. (No. 1). Ninong, Manenguba Mts. 9. vi. 09.

This species has a wide distribution on the West Coast.

7. Barbatula coryphæa.

Barbatula coryphæa Reichw. Journ. für Orn. 1892, p. 181, pl. ii. fig. 2 : Buea, Cameroon Mt.

a. ♀ ad. (No. 2). Ninong, Manenguba Mts. 2. vi. 09.
b. ♂ ad. (No. 1). ,, ,, ,, 11. vi. 09.

This little Barbet was described from specimens obtained on Cameroon Mountain by Dr. Preuss.

Apparently it has not hitherto been met with except in the type-locality.

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* See note on p. 485.

The plate of this species in J. f. O. 1892 is exceedingly poor, the shade of every colour in the figure being incorrect.

8. Barbatula leucolaima.

Barbatula leucolaima Verr. Rev. et Mag. Zool. 1851, p. 263: West Africa.

a. ♂ ad. (No. 2). Ninong, Manenguba Mts. 3. v. 09.

This species had already been obtained on Cameroon Mountain.

The wing-measurement of the bird from Ninong is 56 mm.

B. leucolaima is a smaller species than *B. l. mfumbiri* Ogilvie-Grant, and lacks the greenish wash on the underparts.

9. Dendropicus lafresnayi.

Dendropicos lafresnayi Malh. Rev. et Mag. Zool. 1849, p. 533: Africa.

a–c. ♂ ♀ ad. (Nos. 1–3). Ninong, Manenguba Mts. 3–12. vi. 09.

I have already stated in my paper on the Birds of Cameroon Mt. (Ibis, 1915, p. 490) that *D. camerunensis* Sharpe seems to be a synonym of *D. lafresnayi*. Three examples were obtained in the Manenguba Mts. and one, already recorded, on Cameroon Mountain.

10. Petrochelidon rufigula.

Cotile rufigula (Bocage); Fischer & Reichw. Journ. für Orn. 1884, p. 53: Lake Naivasha, British East Africa.

a. ♀ ad. (No. 1). Manenguba Mts. 29. v. 09.

The type of this species came from Lake Naivasha, but it extends its range right across Africa. The present is, however, the first record from Cameroon, as Dr. Reichenow does not include it in his exhaustive list of the birds which have been procured there up to 1911 (Mitt. Zool. Mus. Berlin, 1911, pp. 239–258).

11. Alseonax murinus obscurus.

Alseonax obscurus Sjöst. Orn. Monatsb. 1893, p. 43: Cameroon Mt.

a–c. ♂ ♀ ad. (Nos. 1–3). Ninong, Manenguba Mts. 11–12. vi. 09.

This is another form found on Cameroon Mountain and closely allied to the typical East African species *Alseonax murinus* (*vide* Ibis, 1915, p. 491).

12. Platystira cyanea.

Muscicapa cyanea Müll. L. N. S. Suppl. 1776, p. 170: Senegal.

a. ♀ ad. (No. 4). Ninong, Manenguba Mts. 20. v. 09.
b. ♀ ad. (No. 5). Ninong, Manenguba Mts. 3. vi. 09.

13. Elminia teresita.

Elminia teresita Antinori, Catalogo, 1864, p. 50: Djur, Bahr-el-Ghazal.

a. ♀ (No. 1). Ninong, Manenguba Mts. 3. iv. 09.

I have already given my reasons for upholding this species (Ibis, 1915, p. 492), which Reichenow includes in the synonymy of *E. longicauda*.

A single example was obtained in this district.

14. Pycnonotus barbatus gabonensis.

Pycnonotus gabonensis Sharpe, Proc. Zool. Soc. 1871, p. 132, pl. vii. fig. 1: Gaboon.

a. ♂ ad. (No. 1). Ninong, Manenguba Mts. 28. v. 09.

This is the representative race in Gaboon and Cameroon of *P. barbatus*, which latter ranges from Senegal to Southern Nigeria.

Although it is known as the Gaboon White-vented Bulbul, the under tail-coverts have a distinct pale yellowish tinge.

15. Bleda flavicollis flavigula.

Trichophorus flavigula Cabanis, Orn. Centralb. 1880, p. 174: Angola.

a, b. ♂ ad. (No. 2). Ninong, Manenguba Mts. 5–9. vi. 09.

This species inhabits the West African Coast from Cameroon to Loango. It must be regarded as a subspecies of *B. flavicollis*.

16. Turdus nigrilorum.

Turdus nigrilorum Reichw. Journ. für Orn. 1892, p. 194: Buea, Cameroon Mt.

a, b. ♂ ♀ imm. (Nos. 1 & 2). Ninong, Manenguba Mts. 3 & 12. vi. 09.

As I have already mentioned (Ibis, 1915, p. 497), I consider *T. nigrilorum* to be only a subspecies, probably of *T. lugubris* Bodd., confined to the Cameroon highlands.

The immature specimen (No. 1) has the upperparts a shade darker throughout than the adult, and the primary-coverts tipped with rufous. The breast is mottled and the flanks spotted with brown and rufous, and the belly white.

17. Saxicola salax pallidigula.

Pratincola pallidigula Reichw. Journ. für Orn. 1892, p. 194: Buea, Cameroon Mt.

a. [♂] ad. (No. 10). Ninong, Manenguba Mts. 28. v. 09.
b. ♂ ad. (No. 9). " " " 2. vi. 09.

These two specimens are particularly interesting, as up to the present no examples of this subspecies had been taken except on the Cameroon Peak.

Moreover, they differ in small points from the series which we now possess from Cameroon Mt. In the first place, one of the birds has a wing-measurement of only 69 mm., which is well within the measurements of typical *S. salax*; the other specimen, however, has a wing of 74 mm. A second small difference is that the chestnut breast-band is paler in colour than in birds from Cameroon Peak, but retains the character which separates *S. s. pallidigula* from *S. salax* in being very wide.

I have already written at some length concerning this Chat in my report on the birds from Cameroon Mountain (*vide* Ibis, 1915, pp. 498–500).

Undoubtedly, birds from the Manenguba and Cameroon

Range must belong to the same species, but the slight differences shown in the series in the British Museum seem to be worth mentioning.

18. Cisticola rufa.

Drymoica rufa Fraser, P. Z. S. 1843, p. 17: "River Quorra, opposite Iddah," West Africa.

a. ♂ ad. (No. 1). Ninong, Manenguba Mts. 10. vi. 09.
b. ♀ imm. (No. 2). ,, ,, ,, 29. vi. 09.

The specimens are both referable to *C. rufa*. As I was at first somewhat doubtful as to whether this was the case, I referred them to Mr. W. L. Sclater, who kindly examined them and pronounced them to be adult and immature examples of the species stated.

19. Schœnicola apicalis.

Catriscus apicalis Cab. Mus. Hein. i. 1850, p. 43: Kafferland.

a–c. ♂ ad. (Nos. 1–3). Manenguba Mts. 28. v. 09.

The three specimens of *S. apicalis* obtained by Alexander at Manenguba extend the known range of this Fan-tailed Warbler very considerably.

An examination of the series in the British Museum shows that the bird is found in Natal, Transvaal, Southern Rhodesia, Nyasaland, south-east Belgian Congo, British East Africa, and Uganda (where it was obtained by the naturalists of the Ruwenzori Expedition), and north to the Bahr-el-Ghazal country, where it was procured, according to Dr. Reichenow, by Heuglin. Until quite recently no example of *Schœnicola* had been obtained from any part of West Africa. Now, however, there is a bird in the British Museum from near Ndalla Tando (northern Angola), procured in 1908 by Ansorge. This remained the only record from western Africa until Alexander obtained examples in Cameroon.

Dr. Reichenow has described as a new species the form from northern Uganda (type-loc., Asholi, *vide* Orn. Monatsb. xv. 1907, p. 172), and alleges that it can be distinguished from typical *S. apicalis* from South Africa.

I have examined a considerable number of specimens from Uganda and south-east Africa, and do not consider that the characters said to distinguish this new race are constant.

Considerable variation takes place in the plumage of the typical form and the feathers wear many shades lighter. Birds from Uganda certainly appear to be generally darker on the upperparts, but when the two series are mixed up it is practically impossible to distinguish the northern from the southern birds.

The two birds from the Manenguba Mountains are particularly interesting, as they do not belong to the dark-backed race, if such can be recognised, but are quite indistinguishable from specimens from Pinetown in Natal. I have therefore referred the Cameroon birds to *S. apicalis.* The single example from Angola is similar to the darkest specimens of so-called *S. a. brunneiceps,* and is much more likely to deserve a subspecific name than any race from East Africa.

20. Calamocichla plebeia.

Calamocichla plebeia Reichw. Orn. Monatsb. 1893, p. 178 : Yaunde, Cameroon.

a. ♀ ad. (No. 1). Near Ruko, Manenguba Mts. 18. vi. 09.

Examples of this rare species were obtained by Alexander on the lower slopes of the Cameroon Mountain. Remarks on this form will be found in my previous paper (Ibis, 1915, p. 502).

21. Apalis binotata.

Apalis binotata Reichw. Journ. für Orn. 1896, p. 41, pl. v. fig. 2 : Yaunde, Cameroon.

a, b. ♂ ♀ ad. (Nos. 1, 2). Ninong, Manenguba Mts. 3. vi. 09.

Examples of this species in the British Museum have been obtained from the River Ja, Cameroon, Mpanga Forest, Uganda, and Ndalla Tando, northern Angola.

Reichenow records it from Yaunde (the type-locality) and Dscha, both in Cameroon.

22. Camaroptera griseoviridis tincta.

Syncopta tincta Cassin, Proc. Philad. Acad. 1855, p. 325: Moonda River, Gaboon.

a, b. ♂ ad. (Nos. 1 & 2). Ninong, Manenguba Mts. 3 & 11. vi. 09.

I have already given (p. 506) my reasons for considering Cameroon and Gaboon examples of *Camaroptera* to be referable to this race and not to typical *C. griseoviridis.*

23. Burnesia leucopogon.

Drymœca leucopogon Cab. Journ. für Orn. 1875, p. 235: Chinchoncho, Loango.

a, b. ♂ ♀ ad. (Nos. 1 & 2). Ninong, Manenguba Mts. 2 & 3. vi. 09.

This species ranges from Cameroon to Angola.

24. Laniarius major.

Telephonus major Hartl. Rev. Zool. 1848, p. 108: Elmina, Gold Coast.

a. ♀ ad. (No. 3). Ninong, Manenguba Mts. 9. vi. 09.

A single example of the West African Boubou was obtained. This species ranges from Sierra Leone to Cameroon, and, according to Mr. W. L. Sclater (Shelley, Birds of Africa, v. pt. 2, p. 306), eastwards as far as the Bahr-el-Ghazal.

25. Fiscus smithi.

Collurio smithi Fraser, Proc. Zool. Soc. 1843, p. 16: Cape Coast Castle.

a, b. ♂ ♀ ad. (Nos. 1 & 2). Ninong, Manenguba Mts. 10 & 12. vi. 09.

Dr. Reichenow has described a Fiscal Shrike from Adamawa, Cameroon, under the name *Fiscus humeralis camerunensis,* which is said to differ from *F. smithi* in having the upper tail-coverts entirely grey like the rump, and the outer tail-feathers with a very broad white outer margin. One would expect the Manenguba bird to belong to this race, but the upper tail-coverts are not entirely grey, being tipped with black as in *F. smithi.* Moreover, in the two specimens obtained from the same locality, the white outer margin of the outer tail-feathers is narrow in one specimen and broad in the other. It is probable that little reliance can be placed on this latter character.

F. smithi camerunensis may be a perfectly distinct subspecies, as Adamawa is in the north of Cameroon and a considerable distance from Manenguba.

The examples from Manenguba must undoubtedly be referred to typical *F. smithi*. I have not seen any specimens from Adamawa.

26. Cinnyris splendida.

Certhia splendida Shaw, Gen. Zool. viii. 1811, p. 191, pl. xxvi. : Africa.

a–e. ♂ ♀ ad. Ninong, Manenguba Mts. 9 & 12. vi. 09.

In 1900, when Shelley wrote vol. ii. of the 'Birds of Africa,' the Splendid Sun-bird had never been procured in Cameroon. It has since, however, been recorded from several localities by Dr. Reichenow before the present small series was obtained.

C. splendida ranges from Senegal to southern Gaboon.

27. Cinnyris preussi.

Cinnyris preussi Reichw. Journ. für Orn. 1892, p. 190: Buea, Cameroon Mt.

a–e. ♂ ♀ ad. et ♂ imm. (Nos. 1–5). Ninong, Manenguba Mts. 3–11. vi. 09.

Alexander had already obtained a large series of this Sun-bird on Cameroon Mountain (*vide* Ibis, 1915, p. 511).

28. Cinnyris bouvieri.

Cinnyris bouvieri Shelley, Monogr. Nect. 1877, p. 277, pl. lxx. : Landana.

a–c. ♂ ad. (Nos. 1–3). Ninong, Manenguba Mts. 2–12. vi. 09.

A fine adult male of this beautiful Sun-bird was procured. The type was obtained at Landana, north of the mouth of the River Congo. The species is very nearly allied to *C. osea* and *C. bifasciata*, but can at once be distinguished by having the forehead purple, instead of the same colour as the rest of the head and neck.

29. Cinnyris oritis?

Cinnyris oritis Reichw. Journ. für Orn. 1892, p. 190: Buea, Cameroon Mt.

a. ♂ (No. 1). Ninong, Manenguba Mts. 9. vi. 09.

The only example obtained from the Manenguba Mountains differs slightly from the four male examples which Alexander shot on Cameroon Mountain.

It appears to be adult, but has a shorter bill, 26·5 mm. instead of 30 mm., and the underparts brighter, becoming quite yellow towards the middle of the belly. Moreover, the metallic feathers of the throat and breast are steel-blue instead of purplish-blue, while the head and cheeks are metallic-green. I can only assume that, despite its adult appearance, it is a younger bird than the specimens obtained on Cameroon Mountain.

30. Cinnyris verticalis.

Cinnyris verticalis Latham, Ind. Orn. i. 1790, p. 298: Africa.

a. ♀ ad. (No. 1). Ninong, Manenguba Mts. 11. vi. 09.

Said by Shelley to range from the Gambia River to Angola and east to Masailand.

31. Macronyx croceus.

Alauda crocea Vieill. Nouv. Dict. i. 1816, p. 365: Java!

a–e. ♂ ♀ ad. et imm. (Nos. 1–5). Ninong, Manenguba Mts. 3–9. vi. 09.

When Shelley wrote vol. iii. of the 'Birds of Africa' (1902), *M. croceus* had not been recorded from Cameroon. It is, however, a widely distributed species and has been recorded from as far north as the Senegal River.

32. Passer diffusus.

Pyrgita diffusa Smith, Rep. S. Afr. Exped. 1836, App. p. 50: north of Orange River.

a. ♂ ad. (No. 1). Ninong, Manenguba Mts. 11. vi. 09.

The only example of a Sparrow obtained by Alexander has caused me a considerable amount of trouble to identify, and even now I am uncertain whether it is rightly referred to this species, as only one specimen was obtained, and this is a particularly pale-coloured bird. Dr. Hartert (Nov. Zool. 1900, p. 44) has recognised six forms of *Passer diffusus*. The wing-measurement of the Ninong bird is 85 mm.; it is therefore too large to be *P. d. thierryi*, which Dr. Hartert considered synonymous with *P. d. gularis*. Shelley, 'Birds of Africa,' iii. pp. 253–4, gives his reasons for not accepting any of Hartert's subspecies, but it is more than likely that *P. d. occidentalis*, the rather darker bird inhabiting the forest-region of West Africa, will have to be recognised. The whole group requires very careful revision.

Reichenow (Vögel Afr. iii. p. 230) revives the name *Passer griseus* Vieill. for this Sparrow, but there seems to be considerable doubt as to which bird Vieillot's description refers. Apart from the habitat, which is given as "Etats-unis" (!), the description does not tally with specimens of the Grey-headed African Sparrow which I have examined (vide *Fringilla grisea* Vieill. Nouv. Dict. xii. 1817, p. 198, and remarks by Ogilvie-Grant, Trans. Zool. Soc. xix. 1910, pp. 304–5).

33. **Serinus hartlaubi.**

Crithagra hartlaubi Bolle, Journ. für Orn. 1858, p. 355: W. Africa.

a. ♂ imm. (No. 1). Manenguba Mts. 11. vi. 09.

The single male example recorded above has not quite assumed adult plumage. The chin is white and the breast and throat are marked with large black spots. It closely resembles the type of *S. pallidigula* Reichw., which, as Shelley has pointed out, is founded on the young of *S. hartlaubi*. In fully adult specimens of *S. hartlaubi* the head and back of the neck appear to become grey. In my paper on the "Birds of St. Thomas' Island," I correctly referred two specimens obtained there to this species, but specimen No. 89 is not quite adult, as the head is not grey. It appears to lose the white chin (which is likewise a sign of immaturity) before assuming the grey head.

34. Linurgus olivaceus.

Coccothraustes olivaceus Fraser, Proc. Zool. Soc. 1842, p. 144: Fernando Po.

Linurgus camerunensis Alexander, Bull. B. O. C. xiii. 1903, p. 38: Cameroon.

a. ♀ ad. (No. 3). Ninong, Manenguba Mts. 2. vi. 09.

As already noted (p. 513), I agree with Alexander that his *L. camerunensis* is indistinguishable from *L. olivaceus* Fraser, and it therefore becomes a synonym of this bird.

35. Coliuspasser ardens concolor.

Vidua concolor Cass. Proc. Philad. Acad. 1848, p. 66: Sierra Leone.

a. ♂ imm. (No. 1). Manenguba Mts. 29. v. 09.

b. [♀] ♂ imm. (No. 2). ,, ,, 2. vi. 09.

The specimen shot on the 2nd of June is undoubtedly a young male, although it has been labelled a female. Too much reliance cannot be placed on the determination of the sex of birds in the Alexander collection.

Shelley and Dr. Reichenow both believe *C. a. concolor* to be distinct from *C. ardens.* Mr. Ogilvie-Grant, however, considers *C. a. concolor* a melanistic variation of *C. ardens* (*vide* Trans. Zool. Soc. xix. 1910, p. 289).

36. Nigrita canicapilla.

Æthiops canicapilla Strickl. P. Z. S. 1841, p. 30: Fernando Po.

a. ♂ ad. (No. 1). Ninong, Manenguba Mts. 9. vi. 09.

A single example of this Negro-Finch was obtained. *Nigrita canicapilla* is the type of the genus *Nigrita*; it appears to range from Southern Nigeria to north Angola, its place being taken in central and eastern Equatorial Africa by *N. schistacea.*

37. Cryptospiza reichenowi.

Pytelia reichenowi Hartl. Ibis, 1874, p. 166: Bondongo, Cameroon.

Cryptospiza elizæ Alexander, Bull. B. O. C. xiii. 1902, p. 38 : Fernando Po.

a, b. ♂ ad. (Nos. 1 & 2). Ninong, Manenguba Mts. 9 & 12. vi. 09.

The type of this species was obtained in the Cameroon Mountains by Dr. Reichenow and figured, J. f. O. 1875, pl. ii. fig. 1, and a second specimen was later secured at Buea by Dr. Preuss.

In 1902 Sharpe described (Bull. B. O. C. xiii. p. 8) *C. ocularis* from Ruwenzori, and in the same year Alexander shot three examples in Fernando Po which he named *Cryptospiza elizæ.* Alexander described *C. elizæ* as differing from *C. reichenowi* and *C. ocularis* in having the top of the head and collar dull olivaceous-fuscous and in having the under tail-coverts black. These do not appear to be distinctive characters, and *C. elizæ* should probably be placed in the synonymy of *C. reichenowi*, as both Shelley and Reichenow have already done.

There seems to be more doubt as to the validity of *C. ocularis* Sharpe. Mr. Ogilvie-Grant considers that *C. reichenowi* and *C. ocularis* are distinct (*vide* Ibis, 1908, p. 270). The males are certainly indistinguishable, and the females from Ruwenzori differ only from the description given by Hartlaub and the female as figured by Reichenow in having the feathers on the lores and *the area surrounding the eye* pale olive-buff, while in *C. reichenowi* only the patch in *front* of the eye is said to be fulvous.

Unfortunately Alexander did not secure a single female bird from either Cameroon or Fernando Po, and it is therefore impossible to go further into the question.

There are, therefore, seven species in the genus as follows :—

1. *Cryptospiza reichenowi* Hartl.
   Type-locality : Bondongo, Cameroon. 4
   ? Synonym, *C. elizæ* Alex. [Fernando Po]. 1

2. *Cryptospiza ocularis* Sharpe.
   Type-locality : Ruwenzori.

3. *Cryptospiza salvadorii* Reichw.
   Type-locality : Siotalit, Shoa.

4. *Cryptospiza borealis* Percival.
   Type-locality : Mt. Urguess, British E. Africa.

5. *Cryptospiza jacksoni* Sharpe.
   Type-locality : Ruwenzori.

6. *Cryptospiza australis* Shelley.
   Type-locality : Milanji, Nyasaland.

7. *Cryptospiza shelleyi* Sharpe.
   Type-locality : Ruwenzori.

Boyd Alexander named a bird *Cryptospiza sharpei*, which, as shown below, is synonymous with *Lagonosticta dybowskii.*

38. **Lagonosticta dybowskii.**

Lagonosticta dybowskii Oust. Le Naturaliste, 1892, p. 231 : Upper Kemo River.

Cryptospiza sharpei Alexander, Bull. B. O. C. xix. 1907, p. 46 : Kemo River.

a. ♂ ad. (No. 1). Manenguba Mts. 11. vi. 09.
b. ♀ ad. (No. 2). Bafum Bum. 2. vii. 09.

The type of *L. dybowskii* was obtained by Dybowski on the upper Kemo River, which, as Shelley remarks, is almost on lat. 5° S., long. 25° E.

It was next obtained on the Kemo River in 1905 by Alexander, who described it as *Cryptospiza sharpei*, overlooking the fact that it had already received a name and that he had secured his bird in the actual type-locality of *L. dybowskii* Oust. Alexander next obtained a specimen of this rare species in July 1906, which is labelled "Camp IV. Alexander-Gosling Expedition," while he shot one of the present specimens at Bafum Bum.

The sexes are not alike, and I have therefore thought it worth while to figure (Part iv. Pl. VII. fig. 2) both the male and the female. It will be seen that the female differs from the male in being much greyer throughout ; moreover, the spots on the breast and flanks in the female are whitish grey, larger and much more numerous than in the male. The male has the belly blackish in contrast to the chest, while the female has the entire underparts of a uniform grey. In the male the spots on the breast and flanks are pure white and smaller than in the female. The carmine-red back, rump, and upper tail-coverts are slightly darker in the male than in the female.

The locality Bafum Bum, where the hen bird was shot, should not be included in the Manenguba District and is not marked on the map (Part iv. Pl. vi.) ; it is, however, the only place at which Alexander obtained any specimens after leaving the Manenguba Range, and the single example of *L. dybowskii* was the only bird secured there. Bafum Bum lies about fifty miles from Manenguba in a north-westerly direction and is marked on most recent maps.

39. Nesocharis shelleyi.

Nesocharis shelleyi Alexander, Bull. B. O. C. xiii. 1903, p. 48: Fernando Po ; Bannerman, Ibis, 1915, p. 514, pl. vii. fig. 1 ; id. Bull. B. O. C. xxxv. 1915, p. 106.

a. ♂ ad. (No. 5). Ninong, Manenguba Mts. 9. vi. 09.

This makes the third locality from which this little Weaver-Finch has now been recorded.

Alexander had previously obtained four examples on Cameroon Mt. (*vide* Ibis, 1915, p. 514), and two, including the type, in the island of Fernando Po (*vide* Ibis, 1903, p. 352).

In the former paper I have described and figured the male for the first time.

In the male specimen from Manenguba the grey of the belly is noticeably darker, and the rump and breast are darker and less washed with orange-yellow, than in the three males from Cameroon Mt.

40. Spermestes cucullatus.

Spermestes cucullatus Swains. Birds West Africa, i. 1837, p. 201 : Senegambia.

a. ♂ ad. (No. 1). Manenguba Mts. 11. vi. 09.

Swainson's Bronze Mannikin ranges over West Africa from Senegambia to Angola and eastwards to Victoria Nyanza. I have also recorded it from Princes Island (Ibis, 1914, p. 606) and the Island of St. Thomas (Ibis, 1915, p. 98), where Alexander procured it.

41. Heterhyphantes insignis.

Heterhyphantes insignis Sharpe, Ibis, 1891, p. 117, pl. vi. fig. 1 : Mt. Elgon.

a, *b*. ♂ ad. (Nos. 6 & 7). Ninong, Manenguba Mts. 2 & 20. vi. 09.

I have already (pp. 516–517) given my reasons for not considering Cameroon examples of this Weaver distinct from the East African species *H. insignis*.

The two following species have been identified for me by Mr. Ogilvie-Grant, who has kindly given me the following notes :—

42. Sitagra anochlorus.

Ploceus anochlorus Reichw. Journ. für Orn. 1912, p. 321 : Wellé River.

a. [♂] ♀. Ninong, Manenguba Mts. 11. vi. 09.
b, *c*. ♀. ,, ,, ,, 12. vi. 09.

This species was described by Dr. Reichenow from a female example obtained at Yakoma on the Wellé River. His description agrees so closely with the two female examples procured by Alexander at Ninong that I have no hesitation in referring them to *S. anochlorus*. The male was hitherto unknown, and as the original description of the female is brief, I have thought it advisable to add somewhat fuller details. There can be no reasonable doubt that the bird here described as the adult male is really such, and is the male of *S. anochlorus*, for it was procured in the same locality as the two females, but a day earlier.

Adult male in full plumage (marked ♀ by Boyd Alexander's collector). Lores, feathers surrounding the eye, cheeks, ear-coverts, chin, and upper throat deep black : top of the head, sides of the neck, and rest of the underparts bright golden-yellow, inclining to orange on the forehead, the black upper throat meeting the yellow lower throat in a concave line ; rest of the upperparts from the nape to the upper tail-coverts yellowish-olive ; tail similar, but rather darker; primaries and secondaries dark brown, yellowish-olive on the outer webs ; wing-coverts very similar, most of the outer webs being yellowish-olive ; the wings when closed appear nearly uniform in colour with the back; under wing-coverts pale yellow, marginal coverts bright yellow. Bill black in dry skin ; feet brownish. Wing 75 mm. ; tail 54.

In general appearance the male most nearly resembles *Sitagra bertrandi* (Shelley) from Nyasaland, but this latter has the forehead and crown orange-chestnut, a black band across the nape, and the quills and wing-coverts with narrower, paler yellow edges to the outer webs.

The male is also nearly allied to *S. heuglini* (Reichenow) (= *Ploceus heuglini neglectus* Neumann), but in that species the black on the upper throat is prolonged down the middle of the lower throat.

Adult female. Top of the head, lores, and a band through the eye to the occiput black, the feathers of the crown more or less mixed with olive ; a narrow frontal and wide superciliary band bright golden-yellow like the rest of the underparts, but the cheeks and upperpart of the chest tinged with dark rufous-orange. The upperparts, from the nape to the upper tail-coverts, olive, darker than in the male. Wings and tail as in the male. Bill black in dry skin ; feet brownish. Wing 75 mm. ; tail 53.

The female reminds one of the immature female of *Heterhyphantes nigricollis* (Vieill.) in first plumage, with the upperparts olive-green ; but in the latter the blackish-olive mantle is assumed before the crown becomes black.

This species is new to the British Museum collection and is a very valuable addition.

As the male had not been described, the specimen here characterised is the male type of the species.

43. Hyphantornis cucullatus.

Oriolus cucullatus P. L. S. Müller, Syst. Nat. Suppl. 1776, p. 87: Senegal.

a, *b*. ♂ ad. et ♀ imm. Ninong, Manenguba Mts. 28.v.09.

The immature female shows no trace of yellow eyebrow-stripes; the upperparts are unusually grey, the plumage of the back being worn and faded, but the new feathers which are moulting in on the neck are brownish-olive, dark brown along the shaft. Wing 80 mm.

The male is in full breeding-plumage; the wing measures 86 mm.

XXXIII.—*On the Plumages of the Male Crossbill* (Loxia curvirostra). By Claude B. Ticehurst, M.A., M.R.C.S., M.B.O.U.

As I have had occasion recently to study the plumages of the Crossbill, I thought that perhaps the results of my endeavours might be of use if put on record. As is well known, the males of *Loxia curvirostra* exhibit a great variation in plumage, and it has always been a puzzle to me to know what this variation might mean. On looking up various authors who have gone into the subject, one does not find any great unanimity of opinion, and this I fancy was largely due to their not having any reliable guide to the age of their specimens. For example, to cite a few authors: Macgillivray (British Birds, vol. i. p. 428) quotes Temminck as saying that the males after the first moult become "dull red, yellowish red, greenish yellow or dull yellow shaded with reddish." Commenting on this, he goes on to say that he was unable to directly trace the changes, but judging from analogy they are not of this miscellaneous character, but are regular, and remarks that he is confident that the greenish yellow is the first winter plumage, followed at the next moult by a red and then by a brighter red plumage. Such a succession of changes as Macgillivray thought took place would in a Palaearctic passerine bird be most remarkable, if not unique.

Wheelwright (A Spring and Summer in Lapland, 1864, pp. 302–304), who had excellent opportunities during his sojourn in Sweden and Lapland, paid a good deal of attention to this subject, and the summary of his ideas is as follows. The males in the first winter assume the yellow-orange plumage, and in no case had he ever shot a male which, retaining any of the striped juvenile feathers, showed any sign that it would become red before the next moult; during the next summer he thought this plumage reddened without a moult; at the next (*i. e.* 2nd) autumn moult the plumage became the normal red, though perhaps some became orange-red. Occasionally, but very rarely, very old birds assumed a yellow-green dress. He felt convinced that the young never become red in the first autumn: he significantly says, however, that red birds are far the commonest, which would be very remarkable if no birds became red in their first year. He goes on to say that he has found males breeding in the same woods (1) in the striped plumage of youth*, (2) in the orange-red dress, (3) in the deep red dress.

The late Prof. Collett (Mindre Medd. vedr. Nörges Fuglef. 1881–92, pp. 76–78) has some interesting remarks on this subject. He says : "An autumn nesting is found every year but in no great quantities, some hatching as late as October. In males of the autumn broods the plumage is, after moulting from the nest-feathering, always yellow-green, never red, and in such males traces of the striped juvenile plumage may yet be seen in February. These males I have found amongst the red ones the whole summer, and early in July I have shot a young male in which new red feathers were appearing amongst the yellow ones.

"Young males in the first winter are partly dark red, partly more or less yellow-red (confirmed also in this by Tschusi zu Schmidhoffen, Monatsch. D. Ver. Sch. Vogelw. 1888, p. 368), though it appears that young males as a rule are yellow-red: yet in those individuals which still carry a trace of the striped feathers of youth over the winter, the colour is always yellowish. Those individuals, which do not seem to be sexually mature by the beginning of the breeding season, are seldom found in the breeding quarters, but probably keep apart in flocks; perhaps these individuals only reach sexual maturity later in the summer, and the abnormal summer and autumn breeding which now and then takes place perhaps belongs in part to these. The colour in breeding males is always red."

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* Surely an error.—C. B. T.

The late Prof. Newton in Yarrell ed. iv. p. 200, says that in the juvenile plumage the males may be distinguished, as noted by Blyth, by the striations being considerably more distinct and more vividly contrasted than in the females. By September the young males have lost much of the striped dress and begin to assume the red plumage of maturity: some do this at once, and this seems to be the normal mode, though they do not so early develope their most brilliant hues; others, possibly less vigorous in constitution, have the red feathers mixed with yellow or become dull orange, the effect of red and yellow combined; others put on a yellowish or yellowish-green dress, and these are probably birds in which development is for some cause still further retarded. Absolute proof that this yellowish-green dress is ultimately replaced by red is wanting, but, though the wearers of it *may not unfrequently be found breeding in it*, there is good reason to believe that this change takes place.

With these rather conflicting opinions before me I started to work out the subject *de novo*, with no preconceived ideas, and I may say that it is only in this way and by the examination of birds in moult that one can arrive at the truth in such questions of obscurity. In order to get some definite basis to work on, the first thing to do was to examine juvenile birds in moult. Of these I was able to get together a very fair series, and was able to pick out an invaluable character by which the males after the first autumn moult was completed could be distinguished from males of at least one year older. It will be found that the three or four (in some individuals more) outer feathers of the greater coverts, the whole of which series in the juvenile plumage have paler tips forming a slight wing-band, are not moulted with the rest of the series and body-feathers. Here, then, one has an absolute guide, which holds good until these pale tips are worn off some time in the next summer, as to which birds are less than a year old and which are more, for the latter have no pale tips to any of the greater coverts. Hence in two ways, by this guide, and by the examination of juvenile specimens in moult, I was able to arrive at what dress was attained in the first autumn. The conclusion that I came to was that such birds cannot be differentiated by the general coloration of the plumage from those of greater age: that is, it is possible to find among both first year and older birds, bright red individuals, dull red ones, others red with a little yellow, red with a fair amount of yellow, orange-red birds, yellow, and green-yellow ones. Of the two brightest red birds in the series (of some 200) one was a bird of the year, the other older. Almost every variety between a red bird and a yellow one may be found; and I may here point out that a bird showing distinctly red and yellow in its plumage is not necessarily moulting from red to yellow or *vice versa,* but the feathers may be part of the one plumage, and it is even possible to find feathers which are partly yellow and partly red. In one extremely handsome variety the whole plumage is bright lemon-yellow interspersed with bright scarlet feathers; two specimens only, neither of them moulting, were of this variety, so it is probably rare: one was a bird of the year, the other older. The yellow or green-yellow birds are nearly invariably birds of the year, though this plumage does very rarely occur in birds of greater age.

Since there are so many variations in dress in male Crossbills of the first autumn, one would not expect to find any remarkable differences at the second autumn. To solve this question with certainty is a difficult matter, since our only guide as to which birds are only a year old and which are two years or more, is frequently lost: that is to say, that by the time the one-year-old bird moults, the pale edges to the juvenile coverts are often worn off. However, I have been able to examine four birds at the second autumn moult, showing such traces of the juvenile wing-bar that there could be no doubt that they had certainly only just completed the first year. Of these, one is a yellow bird moulting into a red plumage but mixed with new yellow and red feathers in the rump; two are orange-yellow birds with here and there a red tinge, both are moulting into a rich rose-red plumage; the fourth is a dull red bird worn to coppery red and is moulting on the flanks, chin, and cheeks to lemon-yellow.

I have been able to examine about a dozen birds at the post-nuptial moult in which there was no trace of the juvenile coverts remaining; however, of course some of these may yet have been birds of the previous year in which the pale edges had been worn off. Of these, two rather resemble the last bird described: they are both red birds, one acquiring new lemon-yellow feathers almost everywhere, the other new yellow feathers on the neck and yellow-green feathers on the back. Three others are moulting more or less from red to red. As so many birds show when in full feather a mixture of red and yellow feathers in their plumage, it is impossible to say that those which are in moult, and show some yellow feathers coming through, will not also, when moult is complete, show some red feathers; and from an examination of a large series of fully adult birds, I find that it is very rare to meet with any which do not show some red in the plumage, the lemon-yellow or green-yellow birds being nearly always birds of the year. Birds moulting from yellow to yellow so far I have not met with, though Dr. Hartert implies (Vögel pal. Fauna, p. 118) that this occurs. That these yellow birds are not always at any rate birds of the year of *autumn* broods is, I think, certain, for I have seen two such birds, obtained in June and July, in which only a trace of the juvenile feathers remained. Some of these yellow males are approached in colour by some of the brightest females, but the latter appear never to be so bright on the crown and mantle.

The striped juvenile plumage is moulted in the first autumn entirely except for the wings, tail, primary coverts, and the outermost three or four greater coverts; at each subsequent autumn every feather is moulted; I cannot find any evidence of any spring moult. The changes which take place as the breeding season advances is variable: some red birds become duller or coppery-red and some yellow birds become bronzy yellow, other red birds become a rather brighter red, others again seem to show little change. Some colour change, due to abrasion, in parts of the plumage, especially on the crown, is I think possible, as in some the red of the feathers is confined to the tips, and when these are worn off, the bronze-yellow of the bases of the feathers would become visible. The brightest red males in first plumage are tinged with red on the scapulars and wing-coverts and even on the bend of the wing (the so-called "*rubrifasciata*").

The period of moult in the Crossbill has long been a puzzle to me, as being such an early breeder one might suppose that, like a Rook, it would moult earlier than do most passerine birds, but this does not appear to be the case. Naturally, the period of moult is a rather variable one according to the earliness or lateness of the broods, but generally speaking it is much the same as in the other finches. Of the juvenile birds, I find the earliest to have finished its post-juvenile moult is one on June 23, but this and another on the 30th are the earliest which showed any moult at all. July and August appear to be the months in which this plumage is cast, but I find several in these months, and one even as late as September 28, in which no moult had begun. The latest bird in which moult was not complete was an odd one killed on Nov. 30. Of birds one or more years old, the earliest in moult was one on July 16, and the earliest completed moult was shown in one on Sept. 23; the latest date by which no moult had begun was Aug. 20, though one on Sept. 19 had only just started, and the latest in uncompleted moult was on Oct. 26; so that one may say that September and a week or two on each side of it covers most of the adult moulting. October birds, whether young or old, are usually through the moult.

The meaning of this yellow plumage occurring in Crossbills has long been the subject of speculation; it was formerly put down to old age, but this theory has long been discarded. It is, however, a well known fact that red Crossbills as well as red males of *Carpodacus*, *Hæmatospiza*, and *Linota* invariably lose their red plumage after moulting in captivity, yellow replacing the red. This has been attributed to lack of proper food, air and exercise, or a combination of all three. Curious and interesting as this coincidence is, it is very difficult to see where it helps us in elucidation of this problem of dichromatism in wild birds. Another theory put forward to explain these yellow birds was that they were diseased or weakly individuals. This theory has been rather widely accepted, but will not, I think, bear investigation for a moment. To begin with, these yellow birds are far too numerous for them *all* to be diseased, weakly, or lacking in vigour; moreover, many of them are in very good condition. If, too, this change in colour is brought about by such conditions, why is it to be seen often in Crossbills and very rarely in other species? Then, again, we have Newton's and Wheelwright's assurance that these yellow birds *breed* in that dress, which does not look as if they were less vigorous than the red birds.

That the yellow feathers are not due to lack of pigment I have satisfied myself; microscopically, the red and the yellow pigments are confined to and evenly distributed throughout the rami except at the extreme tips, and it seems to me that there is in each an equal amount of a different pigment. There undoubtedly is, however, an interesting relationship between red and yellow occurring in birds. In the case of *Loxia*, *Carpodacus*, and *Pinicola*, generally speaking, the males are red and the females yellow: we also find the same thing in some Minivets, while in the Scarlet Tanager and Orchard Oriole the red of the male in summer is replaced by yellow in winter and in females at all times of the year. Then, again, we find a yellow-headed variety, as Mr. Seth Smith informs me, of the Red-headed Gouldian Finch (*Poëphila mirabilis*) occurring in nature, and I have seen red feathers occurring among the bright yellow feathers of the Green Woodpecker. Many other such instances of correlation between red and yellow could doubtless be given.

It has been suggested by von Tschusi that this yellow dress of the Crossbill is atavistic, a reversion to an ancestral plumage,—a theory which it is well-nigh impossible to prove, and which appears to me little better than admitting one's ignorance of the explanation of the phenomenon. Seeing how very much more common this yellow dress is in males of the first year than in older birds, it is tempting to suggest that this plumage is the normal one for first-year birds, and is being gradually skipped over for the commoner red plumage; in slight support of this it may be remarked that the yellow plumage in the Pine Grosbeak males is the usual plumage of the first year, though red birds do also occur. However feasible this sounds, it will not explain the assumption of the yellow plumage in part or in whole by birds of more than one year.

From the lesson of the behaviour of birds in captivity towards coloration, it does seem probable that food has an influence on coloration and that some particular food is necessary to produce the red colour. Is it possible that at the period of moult, in any given area inhabited by Crossbills, there is not enough of this food to go round, and that as a consequence some birds do not get enough red-producing food and therefore moult into a yellow-green dress? This is of course only a theory, and proof for or against it, is, I am afraid, very difficult to obtain.

XXXIV.—*Ornithological Notes from the Alix and Buffalo Lake Districts, Province of Alberta, Canada,* 1914. By CHARLES B. HORSBRUGH.

THE following notes concerning the birds of this particular part of the province of Alberta relate to those whose identity I am certain of. The list might have contained a few others, but I hesitated to include uncertainties, which another season will unfold. This district, wherein I have resided since April, is well wooded and is fairly hilly, with numerous small and large sloughs. To paraphrase a well-known song, it can be stated that "every little homestead has a snipe-marsh of its own," and bird-life, except in the winter, is abundant.

Buffalo Lake, which lies about seven miles north-east of Alix, is a huge expanse of water, roughly about twenty-one miles long by eight miles broad, with a coast-line, so report says, of about two hundred miles. Bird-life there is also abundant and interesting, but the advance of civilization has caused many of the larger birds, such as pelicans, cormorants, gulls, etc., which frequented the lake in olden days, to depart elsewhere. Of late years the ducks are following the example of the pelicans and cranes, owing to ruthless slaughter and slack or inefficient preservation, though good sport is obtained still by the local sportsmen. This last season was an excellent one for Ruffed Grouse and Prairie chicken, but I believe a poor one for geese.

The village of Alix is situated on rolling well-wooded country, about halfway between the well-known towns of Edmonton and Calgary. It is an important railway centre, and the Canadian Pacific, Grand Trunk, and Canadian Northern railways cross each other at this point. For the last seven years the average rainfall has been 17·52 inches.

I have followed the nomenclature and classification of the A. O. U. Check-list.

Æchmophorus occidentalis. Western Grebe.

At Haunted Lakes, on May 17, two pairs of Western Grebes were swimming about side by side, repeatedly lowering their beaks to lightly touch their shoulders for a second's duration. A few more pairs arrived by the 24th, and yet more towards the end of the month, when they then began to build their nests.

On June 1, I went for ten days to Buffalo Lake, and counted six pairs; but towards the end of my visit, from one spot I observed thirty-two pairs and there must have been many more in other parts of this huge expanse of water. I preserved a dead specimen presented me by a farmer, and found its gizzard full of the bird's own feathers and water-weeds. Nesting had just begun when I arrived at the lake, and I found many nests, the majority containing from one to three eggs. These were usually concealed under the rotting vegetation used in the construction of their nests, and were placed amongst the reeds bordering the edge of the lake. Close to this colony we found numerous nests of the Pied-billed Grebes, but no full clutches were seen—the Crows probably accounting for many a despoiled nest.

On November 19 I received a fine male Western Grebe from a friend in Alix which, for the time of year, surprised me, although I have heard reports about these birds being frozen into the ice, so late have they delayed migration.

Colymbus holboelli. Holboell's Grebe.

The loud queerysome wail of this species during the mating season seems to be uttered at all times of the day and night. On a small lake opposite our house, in which we dwelt for our first three months in Alix, a pair appeared on May 7, and I observed them closely during this period. As soon as the hen bird began to sit (about May 25) they were fairly quiet and became so tame that I could approach close to the nest, but the moment I was discovered, the female would at once start to rapidly and thoroughly cover her eggs. Although I found a number of nests of this bird in the neighbourhood of our village, I never observed more than five eggs in a clutch. Mr. F. M. Chapman states the clutch to consist of from three to eight eggs.

Holboell's Grebe seemed to be rare on Buffalo Lake.

It is a curious sight to witness the courting antics of these birds. A pair may be swimming about within a short distance of one another, when the male, on nearer approach to the female, suddenly raises his body at right angles to the water and vigorously pursues her for a yard or two. The latter also progresses in this curious fashion, and both birds always wail at the top of their voices. This weird performance is gone through several times in the course of the day, and possibly night.

Colymbus auritus. Horned Grebe.

On another small lake close to our house I noticed a single bird of the above species on May 3, and three more on the following day. A few days later, whilst watching a pair of Golden-eye and Canvas-backed Ducks on this same spot, I saw a female Grebe dive and viciously nip the male Canvas-back on the belly. The latter, after being thus "torpedoed," flew off to more peaceful waters.

These Grebes also assume quaint courting attitudes: one of the most usual is that the male bird lays his head and neck parallel with the water, at other times hunching-up his back and keeping head and neck in-drawn to the body. I do not remember ever seeing these birds take flight. They were common everywhere as the nesting-season approached, and as a rule were remarkably tame. On May 13 a pair were busy nest-building, and by the 18th had made a bulky structure, which had its base on the bottom of the lake in about two feet of water. The birds swam right up to me whilst immersed to my knees, but were voiceless. By the 30th of the month another nest on a small pond contained four fresh eggs, whilst the pair previously mentioned had two eggs.

Podilymbus podiceps. Pied-billed Grebe.

On June 2, at Buffalo Lake, I obtained an excellent photograph of a nest containing seven eggs, and at Spotted Lake found a fairly large colony on June 19 (see note under Franklin's Gull). These birds appeared much more wary than the Western and Holboell's Grebes.

Gavia immer. Great Northern Diver or Loon.

Badly-mounted specimens of this handsome bird are generally exhibited in most taxidermists' shops in this country. It does not appear to be as common as I expected to find it, and my notes are therefore scanty. It was reported to me that a specimen was to be seen on the lake at Alix village on May 20, and I saw this bird and its mate there on June 7. I could find no trace of a nest. Their weird cries reminded me of the time when my friend Dr. Bowdler Sharpe and I used to watch them on the Sundalsören fiord, Norway, in May and June, 1899. I have reason to believe that another pair reared one young on a lake about four miles south of Alix. On Buffalo Lake they appear to be very rare. Mr. George Cook informed me he picked up a dead specimen in June of the present year on the shore, and Mr. James Brindle told me he saw one on June 3. I saw no specimens during my visit there.

Larus marinus. Greater Black-backed Gull.

On entering Halifax Harbour, March 28, a few of these Gulls were observed.

Larus franklini. Franklin's Gull.

On April 24 three Franklin's Gulls were seen near Alix, and on May 4 six in the same locality. From this date onwards they were one of the commonest birds over a wide tract of country. On Buffalo Lake and many small lakes during June and July they congregated by the thousand, and were always particularly noisy. This species does not appear to nest on the lake, although feeding there extensively ; but on a fair-sized expanse of water within a mile or two of the village of Mirror they do so abundantly. This swamp is called Spotted Lake, on account of the numerous and isolated clumps of reeds of varying sizes, I visited this colony with my friend Mr. George Cook, of Buffalo Lake, on June 19. My notes for this day's trip read as follows:—"To enter the lake we had hard work towing a punt against the stream of a narrow canal, which was one of the exits for the overflow of water, for about two miles. During our progress we flushed several Spotted Sandpipers and a Short-eared Owl from the banks. We also discovered a Scaup's nest at the bottom of the bank, containing ten eggs, which were almost a-wash, the nest being hardly worthy of the name. Entering the lake we soon found quantities of Gulls' nests and young in downy plumage everywhere. Their nests somewhat resemble Coots', being fairly bulky affairs made entirely of dead reeds. We found them in colonies amidst the reedy patches, and the majority of the nests contained two eggs, all of which seemed on the point of hatching out. We computed the number of Gulls in this spot to approach four thousand. Their noisy clamour could be heard for a considerable distance. A fair-sized colony of Pied-billed Grebes also nest amongst the reeds, and although numerous nests were found none contained more than three eggs. A nest of the Canvas-backed Duck with six eggs of the Common Pochard was found completely submerged, doubtless on account of the heavy rains during the early part of the month. We noticed one Common Tern and only a few pairs of ducks (sp.?). Dr. Henry George of Red Deer took two eggs of the Sand-hill Crane on this lake in 1895, but I believe these birds have long since ceased to nest hereabouts."

My wife and I managed to rear a young Franklin's Gull to maturity, feeding it at first on hard-boiled eggs and bread, and at the present time of writing we hear it is doing well in the Zoological Gardens at Vancouver, B.C. The bulk of the Gulls appear to migrate south about the beginning of August, but a few were observed at Alix on September 17, and a little later at Buffalo Lake.

Larus argentatus. Herring-Gull.

This seems to be a rare bird and, I am informed, used to nest on the islands in Buffalo Lake. I only observed a pair there on June 2 and another on the 7th.

Sterna hirundo. Common Tern.

I first observed this species at Haunted Lakes, outside the village of Alix, on May 17, where a few were diving for fish at the narrows of the lake. On a small neighbouring lake I found these birds breeding. On the point of a small island they had laid their eggs in the dried sandy mud, and I found about six or seven nests, each containing two eggs. This Tern is far less numerous than the Black Tern in this part of the country.

Hydrochelidon nigra surinamensis. Black Tern.

I found this a very common bird during the spring and summer months, nesting in small colonies on many a little slough and backwater. The nests, composed of water-weeds and decayed grasses and reeds, are often fairly bulky structures about four to five inches high. Considerable variation exists in regard to size and colour among the eggs of this species. The young soon after hatching are very difficult to discover amongst the long grass on the sloughs. At Buffalo Lake, on June 2, I found several completed nests but only one egg. I was informed that hundreds roost in the reeds around this lake.

Anas platyrhynchos. Wild Duck.

Together with the Greater Scaup this is the commonest species here. It arrived about April 7. I found many nests, the first, containing eleven eggs, being at Haunted Lakes on May 17. This species frequently has its nest far from water, and a favourite situation is in the growing corn.

Chaulelasmus streperus. Gadwall.

On a small slough in the vicinity of Buffalo Lake I saw a pair of Gadwall on May 16, but I feel sure this species must have arrived here a week or two prior to this. I would say that they were not particularly abundant hereabouts.

Mr. Atkinson, who also visited Buffalo Lake at the same time as I did, found a nest with eight eggs on June 5.

Mareca americana. American Widgeon.

Usually known as the Baldpate in this country. Nowhere very common. The first pair was observed near our house on May 4.

Nettion carolinense. Green-winged Teal.

Fairly abundant. One specimen was observed on April 24 on a small pond near our house, and two pairs on May 4. They nest in the long grassy tussocks bordering the sloughs.

Querquedula discors. Blue-winged Teal.

Decidedly more abundant than the former species. My first sight of this bird here occurred on May 7, when I flushed five pairs from a flooded meadow close to Alix, where they feed on very minute water-snails, also water-weeds. On August 13 I noticed a small brood of rather young ducklings of this species close to Alix.

Spatula clypeata. Shoveller.

First pair seen here on May 7. A fairly abundant species. Mr. Atkinson found eggs on June 8 at Buffalo Lake, and we frequently saw parties of ducklings with the female every day during our stay. On July 3 a Shoveller duck was swimming about with eight quite small young on a small pond near our new home. On August 18 I saw some well-grown ducklings close to our house, almost ready to fly.

Dafila acuta. Pintail.

Several birds seen on May 4. Fairly numerous and quite as shy as at home.

Mareca americana. Redhead.

Known here as the Redhead. According to my notes this species appears to be a late arrival as I have no record of it until May 27, when a pair was seen close to our home, on one of the smaller ponds. This bird shares its incubation duties with the Canvas-back Duck, and both Atkinson and myself often found nests containing eggs of the two species.

One such nest which I found near Buffalo Lake on June 5 held sixteen eggs. So overcrowded was it that two eggs lay under water outside the nest. I flushed a Canvas-back, the bulk of the eggs belonging to the other species. It is only fairly common in these parts.

Marila vallisneria. Canvas-back.

April 7 is my earliest record for its advent here. During the mating season these ducks become very tame, and I have often called them close to me, lying concealed in the bushes. By moving a hand slowly they evince curiosity and approach gradually to investigate. They are quite at home in company of other ducks, as my notes for May 17 read that a pair were feeding on a small lake together with pairs of Scaup, Mallard, Buffel-head, Widgeon, Green-winged and Blue-winged Teal, as well as a noisy pair of Holboell's Grebes. I found a nest of the Canvas-back containing eleven eggs on Haunted Lakes, near Alix, on May 24. This was a bulky structure, much like a Coot's, as it was made entirely of decayed reeds. The eggs were covered with a little down and partially hidden under cover of the same nesting materials. This same patch of reeds also held several nests of Holboell's Grebe. Old residents inform me that this species is yearly decreasing in numbers.

Marila marila. Greater Scaup.

A single pair was first noticed here on May 5. Excepting the Mallard, this species seems to be the commonest in this locality. During my trip to Buffalo Lake I must have seen hundreds. Atkinson, on June 5, found a nest containing eight eggs hidden amongst the branches of a small bush. A local name for this bird is "Bluebill."

Clangula clangula americana. American Golden-eye.

In pairs and fairly numerous about April 7. They seemed to become rarer towards the nesting-season, and I did not find any trace of nests or young birds.

Charitonetta albeola. Buffle-head.

My notes for April 24 state that these ducks were to be seen in small numbers on all the ponds hereabouts, and in pairs. They feed at this season on a small red worm-like larva (mosquito?), minute stones, and water-weeds. On May 16 I was giving some horses their morning hay, when I suddenly saw a pair of Buffel-heads fly round the barn a few times and the duck dive like an arrow straight into an old decayed poplar-tree. The nesting-site was an ancient Golden-winged Woodpecker's, about eighteen feet above the ground, and with the aid of a thin twig I could feel a large clutch of eggs. On the lake just below the barn I saw a hen bird on June 18, followed by five young ducklings, which I watched for many days. The feet of the ducklings are dark slate, and I should like to know when they assume the striking flesh-coloured tint of the adult. Whilst driving a few miles south of Alix with my wife, on June 21, we almost ran over a duck with five young. She was leading them through the long grass towards water (some considerable distance from the trail) and was a most devoted parent, flying around very close to us until we passed on. These birds are excellent eating, but if wounded are almost impossible to retrieve on account of their diving powers. The local name given them is "Butter-balls." This species seems to be fairly plentiful in this part of the province, but so shy are they in the vicinity of their nesting-sites that the latter are rarely betrayed. I located two other nests, but could not find the exact spots. These birds are reported to nest in holes in the ground if suitable trees are scarce.

Oidemia deglandi. White-winged Scoter.

At Haunted Lakes, on May 10, my notes record "many pairs of these ducks." Whilst staying at Buffalo Lake in June I saw many hundreds, and they were quite the commonest species. They nest round the lake, inland amongst the bushes, much later than other species. Mr. George Cook informed me that he had found nests in late July.

Erismatura jamaicensis. Ruddy Duck.

I came across several pairs of this handsome species at Buffalo Lake in June, but had no success in discovering a nest. Mr. George Cook showed me eggs he had taken a year or two ago. On Parlby Lake, Alix, I observed a pair which were fairly tame. The curious position of the tail—at right angles to the body—determines the species at a considerable distance.

Chen hyperboreus hyperboreus. Lesser Snow Goose.

Mr. James Brindle sent me a pair of these birds—a lucky shot having secured five specimens at once—from Buffalo Lake on September 26. They were excellent eating. On October 8 I received another male from the same locality.

Almost a thousand, or even more, were noisily migrating south over Alix on October 26 during day and night.

Branta canadensis canadensis. Canada Goose.

I have only seen a single bird on a small pond a few miles north of our house on May 19, and a pair at Buffalo Lake on June 3. My host, Mr. Brindle, owned a pair of tame ones which quickly lured the wild visitors to their deaths. These birds are not protected on account of the damage they cause to the crops ; as a result, persecution yearly diminishes their numbers.

Olor sp.? Swans.

Mr. Walter Parlby reported three swans on his lake, about 2½ miles west of Alix, for a few days, and I also heard of a flock of seven, on Haunted Lakes, during the last week in April.

Botaurus lentiginosus. American Bittern.

A fairly common summer resident. I first observed a pair at Haunted Lakes on May 10, and flushed a bird off a nest with two eggs at Buffalo Lake on June 5, and Mr. Atkinson found another with four eggs on the 6th. The call of this bird is certainly one of the weirdest I have ever heard, and at first I failed to determine what caused it. The bird which Mr. Atkinson flushed, he said, sat on its nest during a heavy shower, with its bill pointing heavenwards.

Ardea herodias herodias. Great Blue Heron.

For a little while a heron of this species frequented Haunted Lakes, and another, Parlby Lake, during the late summer, but I did not personally see any specimens.

Porzana carolina. Sora.

This species seems to frequent every marsh in the neighbourhood of Alix. Mr. Atkinson found a nest with three eggs at Buffalo Lake on June 1, and at the same locality I also found a nest with nine eggs and another containing thirteen, on the 3rd and 9th of June respectively. These nests were very cunningly concealed in dead rushes. On July 8 I picked up a dead Sora which had flown against the telegraph-wires in the main street of Alix.

Fulica americana. American Coot.

Quite the commonest bird on Buffalo Lake, where I found many nests. The average clutch contained ten eggs. I saw two nests with twelve and thirteen eggs respectively. I found eggs in all stages of incubation on June 1. A pair of birds attempted to build near our house, close to a pair of Holboell's Grebes, on a small lake. Some nests were built with landing stages.

Steganopus tricolor. Wilson's Phalarope.

I saw a pair of these birds at Buffalo Lake on June 3, and later found them fairly common. I flushed a pair on June 5 out of some dried grass, where I feel sure they intended nesting.

Recurvirostra americana. American Avocet.

On a small lake near Buffalo Lake I saw a single bird on June 3, where the previous year Mr. George Cook had found several clutches.

Gallinago delicata. Wilson's Snipe.

I found this species plentiful on Buffalo Lake and also around Alix, where I flushed a bird off four eggs on July 18.

Actitis macularia. Spotted Sandpiper.

Not uncommon in this district. On June 21, within a few miles of Alix, my wife and I found three newly hatched young on the roadside, after a close search for a quarter of an hour.

Oxyechus vociferus vociferus. Killdeer.

Two or three pairs were observed during my visit to Buffalo Lake in June. Mr. Atkinson found a handsome clutch of four eggs at this locality early the same month. Another clutch had been destroyed by crows.

Bonasa umbellus togata. Canada Ruffed Grouse.

This last season was an excellent one for grouse, as coveys were large and numerous. A nest with ten eggs was found near the house on May 25. These birds are quite fearless and afford poor sport, as they are not easily flushed, even with a dog. They are very bold in defence of their young, and endeavour to lure one away from the vicinity of their brood or nest by feigning a broken wing.

Perdix perdix var. Hungarian Partridge.

Mr. Walter Parlby informed me that fifteen brace of these birds, received from New York, were turned down in April 1909 close to Alix. Unfortunately a snow-storm, which doubtless caused many deaths, occurred next day. Various reports stated that a few birds were seen the following year, but since then they seem to have disappeared. The annual report of the Department of Agriculture for Alberta for 1913 states that "the Hungarian or European Partridge (no scientific name given), which was imported and distributed in the Calgary district some few years ago, has increased to such an extent that it has been deemed advisable to declare an open season." The bag limit was placed at twenty-five birds for the season, and five per day, the open season being during the months of October and November.

Tympanuchus americanus americanus. Prairie Chicken.

A fairly common species and very tame during the nesting-season, but wild enough soon after the shooting-season opens.

Zenaidura macroura macroura. Mourning Dove.

I received a specimen from Mr. George Cook, which he shot at Buffalo Lake on November 9. He states that it is very rare and this was the only one seen.

Circus hudsonius. Marsh Hawk.

May 13 is my first record for this species, which later in the season may daily be seen flying over the sloughs in search of prey. I received a young male in the flesh on September 17.

Accipiter velox. Sharp-shinned Hawk.

I received an immature male bird on October 6 which was shot near Alix. The species seems rare in this district.

Astur atricapillus atricapillus. Goshawk.

I first observed this species on May 15, flying over a lake near our house. A fine specimen boldly flew into our poultry-yard on October 15, but did no damage to the chickens. I shot an immature bird on the 28th which also came to worry the poultry. A nice male specimen, shot at Alix, was presented to me on November 26.

Buteo borealis borealis. Red-tailed Hawk.

In a small copse bordering a large grassy slough I found a nest of this species on May 9. It was placed in a straight poplar about 35 feet from the ground and contained three eggs, dullish white slightly blotched with pale red markings, and well incubated. The birds were very noisy, and kept in the vicinity until we left.

On June 21, shortly after my wife and I almost drove over a brood of young Buffel-headed Ducks (see notes under that species), we saw a Red-tailed Hawk evidently searching for them. A pair were flying round the house on August 17, mewing like European Buzzards. I shot a male, heavy in moult, on September 26. The crop contained a partly digested squirrel.

Aquila chrysaëtos. Golden Eagle.

This bird seems to be fairly common, as I saw a good many in various taxidermists' shops and hotels at Calgary and Edmonton. At Mirror a youth has a magnificent specimen which was wounded at Spotted Lake about a year ago. I observed a Golden Eagle feeding on a rabbit within a few hundred yards of the house on October 20.

Haliaëtus leucocephalus leucocephalus. Bald Eagle.

Whilst at Buffalo Lake, on May 19, a farmer showed me a very fine specimen of this species he had picked up from a nest which a gale had blown down, together with the whole tree, four years ago. During the present year it has assumed the white head and tail, which even yet are not so pure as is attained by more adult specimens.

Mr. George Cook brought me an immature female shot at Buffalo Lake on September 28. The spread of wings measured seven feet two inches, and the crop was filled with fish.

Falco sparverius sparverius. Sparrow-Hawk.

A common summer visitant. I saw one investigating the nesting-site of the Buffel-headed Duck I found close to the barn (see note *re* Buffel-head). A single bird first seen near Alix on May 6.

Asio wilsonianus. Long-eared Owl.

On May 24 I went to Haunted Lakes, where Mr. H. Hickling showed me an old hawk's nest tenanted by a pair of Great Horned Owls. Below this nest I found the legs of a Long-eared Owl which had been picked by a young well-fledged youngster of the larger species.

I received a male bird on September 26 and another on the 13th of following month.

Asio flammeus. Short-eared Owl.

At Buffalo Lake on June 5, Mr. Atkinson found a nest in the long grass close to the water, with five eggs on the point of hatching. Near the same locality Mr. George Cook found another with four eggs on June 9. A specimen in the flesh was shot near Alix and presented to me on October 15.

Cryptoglaux acadica acadica. Saw-whet Owl.

I received a specimen on December 5, which was shot a few miles south of Alix.

Bubo virginianus pallescens. Western Great Horned Owl.

Near Buffalo Lake on May 16, I found a pair of young Owls of this species sitting in an old hawk's nest which was placed in a high and leafless poplar. Mr. George Cook ascended the tree with climbing-irons and brought me the birds, which were well grown. The remains of a Shoveller Duck and Blue-winged Teal lay in the nest and a few small bones of various birds.

At the present date they are full-grown and thriving in my barn, and are quite tame. Whilst Cook was looting the nest the female frequently sat just above his head uttering croaks sounding like "werk," "werk," but the male kept at a distance.

I caught a fine bird in a gin-trap on October 21 close to the house, and received a living specimen on November 2 caught near Alix. Both these birds are now in the barn, and feed readily on rabbits, musk-rats, etc. This species is fairly common in this locality and can often be heard calling at night.

Nyctea nyctea. Snowy Owl.

I heard lately that a pair of birds had been seen near Mirror in November, and believe it is a regular, though rare, winter migrant to this locality. I have seen two mounted specimens which were probably obtained locally, but they possess no data. Mr. George Cook presented me with a fine living specimen on December 13, which is still with me.

Surnia ulula caparoch. Hawk-Owl.

I received a pair in the flesh on September 17, shot near Alix. I have also a living specimen which had damaged its wing against the telephone-wires and up to the present time (December) has quite recovered in captivity. This species I believe to be common here. Fisher states that the note is a shrill cry, which is uttered while the bird is on the wing. My specimen gives voice to a melodious "wheup, oop, oop, oop, oop, oop," generally at dusk.

Ceryle alcyon. Belted Kingfisher.

I have only seen a single specimen, which was sitting on the telegraph-wires close to Alix on August 5.

Dryobates villosus leucomelas. Northern Hairy Woodpecker.

A fairly common resident throughout the year.

Sphyrapicus varius varius. Yellow-bellied Sapsucker.

In the early spring this species is a quiet migrant, but towards the nesting-season is the reverse of silent. It is fairly plentiful in this locality, and I found numerous nests, which are usually situated from twenty or more feet up the tree-trunk. I was presented on July 15 with four young birds, which my wife and I reared on house-flies, wasp-grubs, and hard-boiled eggs. We also found, as their name gave us to expect, that they were very partial to syrup and water, which they greedily swallowed. Insectivorous food arriving from home enabled our pets to get through a successful moult, and by October 28 we could see a few red feathers on the heads of the two male specimens. Unfortunately we lost three of these birds, due chiefly to the sudden cold weather, but my remaining specimen continues to do well. A female flew into my shack on July 27, which I released later.

Colaptes auratus luteus. Northern Flicker or Golden-winged Woodpecker.

I noticed a specimen feeding on an ant-heap on April 21, and after this date they became quite common. Throughout the nesting-season I found many borings for nest-holes. They seem to migrate early in the autumn.

Tyrannus tyrannus. Kingbird.

I observed a pair near Alix on April 4. Eggs were found on June 10 near Alix by a friend, and on the village lake I found a nest with four eggs and two others with well-fledged young. This species is a common summer resident.

Corvus brachyrhynchus hesperis. Western Crow.

This was almost the only bird observed during our run from Halifax to Calgary, flying about singly or in small flocks, generally close to the towns and villages en route.

It is one of the commonest birds in this locality and is most destructive to game. I noticed many nests of ducks and other birds destroyed by crows. Several nests were observed placed in low bushes about six or eight feet from the ground. I found three crows' nests on May 21 close to Alix, all containing five eggs highly incubated. The birds were very tame, and fiercely mobbed me until I shot three.

Pica pica hudsonia. Magpie.

I observed a pair of Magpies close to the house on September 12, and another pair on October 20 in the same locality.

Molothrus ater ater. Cowbird.

At Alix a few of these birds arrived on April 17, where they are common summer visitants. A friend found an egg in the nest of a Clay-coloured Sparrow with three of the rightful owner's, near Alix on June 10, and I found two eggs in a Song-Sparrow's nest, which held five of the latter's, in the same locality on June 14.

Xanthocephalus xanthocephalus. Yellow-headed Blackbird.

This species nests commonly around Buffalo Lake in the reeds. I first noticed nests with eggs on June 2.

Agelæus phœniceus fortis. Thick-billed Red-winged Blackbird.

In company with the Yellow-headed Blackbird this species also nested abundantly in the district and in almost every slough around Alix. I found eggs on June 2 at the former place, and many more elsewhere subsequently.

Sturnella neglecta. Western Meadowlark.

A very common summer resident everywhere. I did not succeed in finding any nests of this species.

It has a most striking and musical song, and prefers to sing from a telegraph-pole or fence-post.

Quiscalus quiscala quiscala. Purple Grackle.

I observed this species in fair numbers at Buffalo Lake and Alix. At the former place I found several nests on June 2 ready for eggs, and on June 10 two clutches of three eggs.

Passer domesticus domesticus. House-Sparrow.

At Haunted Lakes on April 17 I saw three or four pairs of this species and a few in Alix, but on December 2 this number had increased to over thirty. I did not observe any at Buffalo Lake.

Astragalinus tristis tristis. Goldfinch.

Not a very common summer visitant. I first observed a pair on July 3 at Alix.

Plectrophenax nivalis nivalis. Snow-Bunting.

A flock of ten appeared near the house on November 16 and they have since been numerous throughout the district.

Passerculus sandwichensis alaudinus. Western Savannah Sparrow.

Fairly common around Buffalo Lake, where I found a clutch of four eggs, cleverly concealed in the grass, on June 3, and on June 14 another clutch of five eggs with two Cowbirds' eggs near Alix. This bird is rather shy, and on this account may be more abundant than would appear to be the case.

Spizella pallida. Clay-coloured Sparrow.

I was shown a nest with three eggs and one of a Cowbird near Alix on June 10, and another on the 14th with young just hatched.

Junco hyemalis hyemalis. Slate-coloured Junko.

I did not observe this species until September 23, when there were many flying about close to the house.

Zamelodia ludoviciana. Rose-breasted Grosbeak.

Rare. I only saw three specimens early in May near Alix. I was surprised at the sweetness of the song.

Petrochelidon lunifrons lunifrons. Cliff-Swallow.

Under the eaves of a barn at Dartmoor (about 2½ miles west of Alix) a number yearly build their nests in June.

Iridoprocne bicolor. Tree-Swallow.

Mr. George Cook showed me several coffee-pots with the spouts removed, in which these swallows nested every year in front of his house at Buffalo Lake. These birds also nest in old woodpeckers' nests of the smaller species, and I saw the Swallow at Alix in May hunting round the woods near the house for nesting-holes. Mr. Atkinson and I found a nest by the roadside, near Buffalo Lake, in a hole in an old burnt poplar stump on June 3. It was plentifully lined with feathers, but had no eggs. I also found a nest at Haunted Lakes too high up to examine.

Riparia riparia. Bank-Swallow.

A few pairs nested in a railway-cutting near Haunted Lakes in June.

Bombycilla garrula. Bohemian Waxwing.

Dr. Henry George informed me that a pair of these birds nested this year in a garden at Red Deer, and Mr. George Cook has a skin which was obtained near Buffalo Lake on January 19 this year; he had also found a nest on June 8, with four young birds, in same locality. One was dead in the nest, but the rest were ready to fly. He further stated that these birds were plentiful during January and September.

Troglodytes aëdon parkmani. Western House-Wren.

Fairly abundant. On June 23 I was shown a nest which had been built in the string-box attached to a reaping machine. It was a very bulky structure made of small twigs, plentifully lined with fowls' feathers and horse-hair. It contained six eggs. I found another nest, near Alix, which was merely a collection of a few feathers and horse-hairs built in a hole in a small decayed poplar-tree, and another in June in a large stump which held young birds.

Telmatodytes palustris iliacus. Prairie Marsh-Wren.

Mr. Atkinson and I found numerous nests of this species in the reeds around Buffalo Lake, but none held eggs. The birds, nevertheless, were always very noisy but shy.

Penthestes hudsonius hudsonius. Hudsonian Chickadee.

A common resident. Except in the nesting-season they keep in small flocks and are very tame. I found a nest with young in a hole in a dead poplar, about three feet from the ground, near the house on May 30.

Planesticus migratorius propinquus. Western Robin.

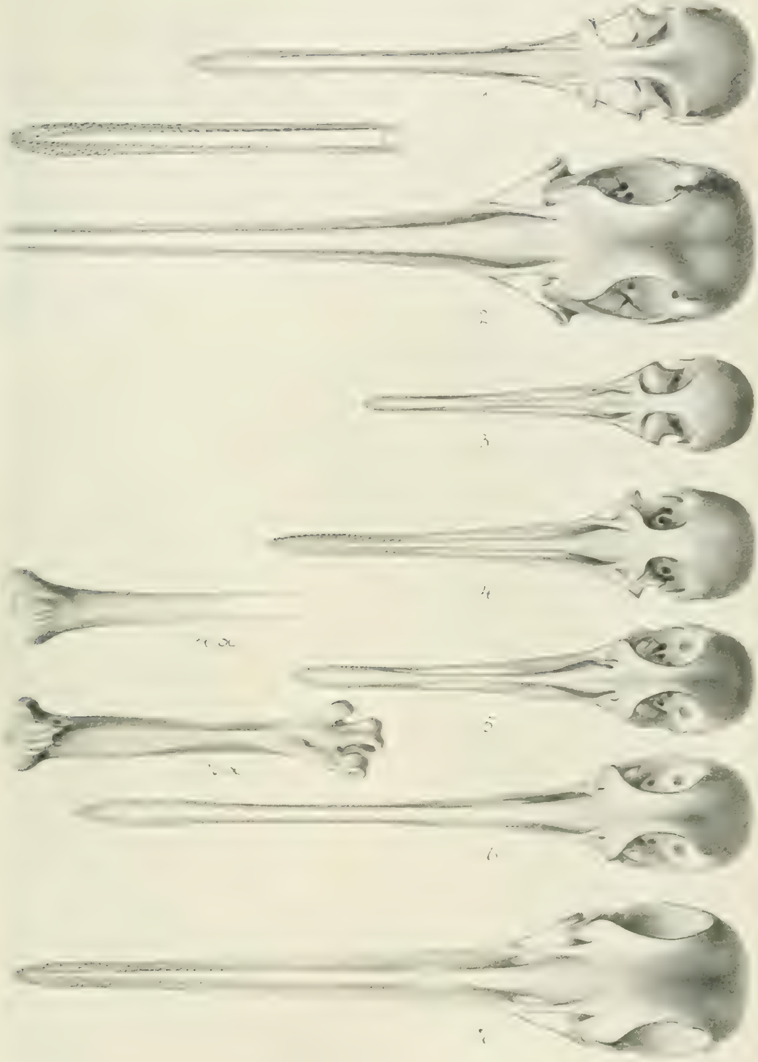
Plentiful around Alix, but I failed to observe any at Buffalo Lake. I saw many young birds but no nests.

XXXV. — *Studies on the Charadriiformes.* — II. *On the Osteology of the Chatham Island Snipe* (Cœnocorypha pusilla *Buller*). By Percy R. Lowe, M.B., M.B.O.U.

(Plate VIII.; Text-figures 12–14.)

The ultimate objects which ornithologists have in view are, I take it, first, to acquire as complete a knowledge of present existing birds as is possible; secondly, to co-relate this knowledge with what we know of the birds of past geological ages; and, finally, out of the sum of knowledge thus obtained, to construct an ideal genealogical tree, which shall demonstrate in as vivid a way as possible the phylogenetic relationships and history of the whole class under consideration. In attempting to do this, ornithologists are, perhaps, handicapped to a greater extent than any other class of zoologists, chiefly owing to the gaps in the geological record. Imperfect as this record is in every branch of the animal kingdom, it is, I think, an admitted fact that in the class Aves the record is more imperfect than in any other. As a compensating factor to set against this undoubted handicap we have, however, an asset which I am inclined to think is sometimes overlooked. I refer, of course, to the extraordinary *persistency* of bird-types. As a result of this persistency, we not only find that certain birds of to-day present the most surprising likeness to the birds of, let us say, a geological age as far back as the Pliocene or Miocene, but that in the present age we meet with many types which are for all practical purposes "living fossils."

Of these "living fossils" we must, in lieu of fossils proper, make the most we can. So far as one has been able to gather from an examination of a complete skeleton in the British Museum, the Chatham Island Snipe might be said with very little exaggeration to be one of these "living fossils,"—there is little doubt, at any rate, that it is an ancient and generalised Snipe, which from the point of view of the phylogeny of the Scolopacinæ is of great interest.



H. GRÖNVOLD, DEL.
MENPES PRESS, WATFORD

SKULLS OF SCOLOPACINE AND ALLIED FORMS.

1. Rhynchea bengalensis. 2. Homoptilura gigantea. 3. Erolia alpina.
4. Coenocorypha pusilla. 5. Lymnocryptes gallinula. 6. Gallinago gallinago.
7. Scolopax rusticola. 7a. S. rusticola; tarso-metatarsus, posterior view. $\frac{3}{2}$
4a. C. pusilla; tarso-metatarsus, posterior view. $\frac{2}{1}$

The Chatham Island Snipe is resident in the extreme south, and, like many other types of Waders found in southern or ultra-southern latitudes, its characters present us with a picture in interesting contrast with those proper to more northern types.

Taking, for instance, Waders whose present distribution is confined roughly to regions south of the equator, and excluding certain migratory types or types with a world-wide range, we find in this southern half of the globe many Waders whose characters seem to present a general picture which can only be taken to correspond to a geological era anterior to the present one. The impression which we get, and the conclusion which it seems difficult to escape, appears to be, that this peculiar southern Wader-fauna has been forced southwards towards the southern extremities of the great land-masses of the world by adverse conditions, either climatic, physical, or faunal, which obtained in the north; and that it represents to a great extent the relics of a fauna which had at one time a more extensive northerly distribution or origin.

Examples among the southern Waders of such an old-time fauna which occur to one at once are the following:—The Jacanas (Jacanidæ), the Painted Snipe (Rhynchæidæ), the Stone-Curlews (Œdicnemidæ), the Seed-Snipes (Attagidæ), and the Sheathbills (Chionidæ), together with such peculiar types as the Slender-billed Plover (*Oreophilus*), the Chilian Sandpiper (*Phegornis*), the Magellanic Plover (*Pluvianellus*), the New Zealand Plover (*Thinornis*), the Black-fronted Dotterel of Australia (*Elseyornis*), and, finally, that group in which the Chatham Island Snipe may itself be included, viz., Seebohm's "semi-Woodcocks." These "semi-Woodcocks" of Seebohm comprise, in addition to the genus *Cœnocorypha*, such highly interesting South American forms as *Gallinago stricklandi* Gray of the Chilian Andes, *G. jamesoni* Bonaparte of the Peruvian Andes, *G. imperialis* Sclater of Colombia, *Homoptilura undulata* (Bodd.) of the mountains of Guiana, and *H. undulata gigantea* (Natterer) of Brazil. These last are found in very elevated forested mountains, sometimes as high as 7000 feet, and, judging from a skull of the last-mentioned form, to be noticed hereafter, they are more Rusticoline than Gallinagine. Seebohm coined his term "semi-Woodcock" after examination of skins only. He found, however, that the colour-pattern characteristic of the South American forms was much more Gallinagine than Rusticoline, although it is interesting to note that without the aid of osteology he practically summed up the correct nature of these birds, viz., that they were generalised Snipe-like forms—neither true Woodcocks nor true Snipe. Unfortunately, with the exception of the skull of *Homoptilura*, there is no available material in the British Museum wherewith to examine the osteological secrets of this extremely interesting and generalised group, which might throw so much light on the past history of the Scolopacine subfamily. Specimens in the flesh of all such forms are badly wanted.

The more one studies these and the other southern forms mentioned above, the more impressed one becomes with the fact that in them we have what it is hardly an exaggeration to call a series of "living fossils." They are persistent relics of diverging branches which shot from the old ancestral trunk—branches which, although they seem to have arrived at a blind alley of evolution, reflect in some of their peculiarities a greater or lesser number of the features which must have characterised the original ancestral stock. They would appear to represent disconnected stages in the gradual (or sudden) evolutionary unfoldings of the Limicoline germinal plasm, and the question is—Do they furnish us with any hints which will put us on the right track in attempting to retrace the evolutionary path pursued by their more modern congeners? There are points in the osteological features presented by *Cœnocorypha pusilla* of the Chatham Islands which might be interpreted in this sense, and, since the skeletal features of this form have never, so far as I am aware, been previously described, I propose to consider them in this paper.

There are, however, one or two preliminary points to which I should like to refer before commencing this account. I have said that there is good reason to regard the Chatham Island Snipe as an ancient and generalised form—apparently the most generalised Snipe-like form of which we have any evidence—and that its present habitat is ultra-southern. Have we any right to assume, as is invariably done in other like cases, that the present-day habitat of this the most generalised Scolopacine form represents the centre of dispersal (or part of the original focus of dispersal) of the Scolopacine race? In a recent and most interesting paper on "Climate and Evolution," Dr. W. D. Matthew (Annals N.Y. Acad. Sci. vol. xxiv. 1915, pp. 171–318) has stated as his opinion that such an assumption as regards generalised members of other groups is "wholly illogical." "Whatever agencies," he says (p. 180), "may be assigned as the cause of evolution of a race, it should be at first most progressive at its point of original dispersal, and it will continue this progress at that point in response to whatever stimulus originally caused it and spread out in successive waves of migration. . . . At any one time, therefore, the most advanced stages should be nearest the centre of dispersal, the most conservative stages farthest from it. In the same way, in considering the evidence from extinct species as to the centre of dispersal of a race, it has frequently been assumed that the region where the most primitive member of a race has been found should be regarded as the source of the race, although in some instances more advanced species of the same race were living at the same time in other regions. The discovery of very primitive Sirenians in Egypt, while at the same time much more advanced Sirenians were living in Europe, has been regarded as evidence that Africa was the centre of dispersal of this order. *It is to my mind good evidence that it was not* (italics mine). . . . . it is much more correct to say that the modern African fauna is of Tertiary aspect, and is in large part the late Tertiary fauna of the northern world, driven southward by climatic change and the competition of higher types."

With the evidence which we shall shortly give of the generalised nature of the species comprising the genus *Cœnocorypha* of the ultra-south, and of those peculiar South American forms comprising the group of gigantic Scolopacine species which are neither wholly Rusticoline nor wholly Gallinagine, and which Seebohm called semi-Woodcocks, the views put forward by Matthew are of great interest. If we agree, for instance, with his conclusions and for the present ignore all consideration of the ancient Antarctica, it is evident that the original centre of dispersal and evolution of the Snipes was in the north.

But it might conduce to the interest of this aspect of the past history of the genus *Cœnocorypha* if we add the few following remarks which are ancillary to the subject.

The Chatham Islands comprise a small isolated group some five hundred miles to the east of New Zealand. At the present day, the only island of the group inhabited by *C. pusilla* is a small outlier named Mangare; but we may feel certain that this present-day restriction is simply due to extermination of the species on the other islands subsequent to the arrival of man and of carnivorous animals * introduced by him †.

Allied forms of *C. pusilla* are found on the Auckland Islands (*C. aucklandica* Gray) and on Snares Island (*C. heugeli* Tristram). I have not had the opportunity of examining the osteological features of these two species, but we may, I think, take it for granted that in all essential points they are similar to those of *C. pusilla*. There is no reliable record of any species of *Cœnocorypha* ever having been taken in New Zealand, nor have any fossil relics been obtained there. Nevertheless, it appears not improbable that some form of this genus must have originally inhabited New Zealand, but that since the advent of man all traces of it have disappeared. In connection with this curious absence it is interesting to reflect that no other resident species of Snipe (*Gallinago*) is known from either New Zealand or Australia—or, for that matter, from India (excluding high mountainous regions of the north) or the Malay Archipelago.

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* *Cœnocorypha* is on the way to become flightless.

† Since this was written I have found sub-fossil forms of *C. pusilla* from Wharekauri (Chathams) in the collections of Lord Rothschild and Dr. H. O. Forbes.

This allusion to the absence of *Cænocorypha* from New Zealand introduces us, however, to a very brief notice of the geological and other evidence bearing on the question whether the Chathams (and the other islands mentioned) were or were not connected in Tertiary times with Australia or New Zealand, for it is obvious that this question is one which bears on the past history of *Cænocorypha*, and through that genus on the whole history of the Scolopacine subfamily.

Hutton (Index Faunæ Novæ Zeland.), after stating that the Chathams consist of fossiliferous limestones (and clay slates) of early Miocene age resting on a low platform of ancient schistose rocks, mentions the presence of fresh-water species of *Galaxias* * which are similar to those of New Zealand and "which do not appear to go down to the sea." On Pitt Island (one of the Chathams) there is a lizard closely related to *Lygosoma moko* † of New Zealand. The Chathams and Aucklands have also small forest-birds, as well as slugs and beetles, "none of which could cross over a sea-barrier." Hutton concludes, therefore, that the Chathams and the other neighbouring islands were once connected with New Zealand, and derived the main part of their fauna overland. He thinks that the number of endemic species and even genera among the land-animals of all these islands proves that they have been long separated, and altogether precludes the idea of a comparatively recent Antarctic continent connected with New Zealand. They also preclude the idea of a very cold climate having existed in the Southern Hemisphere since the islands were separated from New Zealand—that is, since the Pliocene.

Andrews ('Novitates Zoologicæ,' vol. iii. 1896, pp. 73, 260) believes that there is nothing in the present fauna of the

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* It is now known that the Galaxiidæ breed in the sea.

† *Lygosoma* is a genus of wide distribution in the Pacific and elsewhere and is obviously capable of transporting itself over sea.

Chathams to show that since their last emergence (Pliocene) they have been connected with any land-area whatever. "On the contrary," he says, "it seems clear that since that period they have never been united even with New Zealand, for not a trace of any of the Dinornithidæ, *Apteryx, Cnemiornis, Aptornis*, or any of the flightless birds characteristic of those islands, have been found on them. Moreover, as Dr. H. O. Forbes himself has pointed out, no fragments of the skeleton of *Diaphorapteryx* are recorded from the ancient land-mass of New Zealand." It seems clear, therefore, that the Chathams and Aucklands have been separated for a very considerable period from New Zealand, but that, nevertheless, the species of the genus *Cœnocorypha* have been derived from a stock which originally hailed from that land-mass. But it is also obvious that this stock did not arise *de novo* in the ancient antipodes, and that it must have been derived from a still more ancient and more northerly living stock—in other words, these ultra-southern Snipe came originally "radiating from the north."

On the other hand, there are those who would hold that the great likeness which Strickland's Snipe (*Gallinago stricklandi*) of the Straits of Magellan and Chile (as well as the other generalised antipodean Snipe previously mentioned) bears to these Chatham Island Snipe points to the supposition that they all came "radiating from the south." Behind the striking similarity of form which exists in the resident Snipe of these isolated and widely separated southern extremities of the Old and New World, looms, they would hold, the ancient Antarctic continent.

Dr. H. O. Forbes, in an interesting paper read before the Royal Geographical Society in 1893 on the relation of the Chatham Islands to a former southern continent, held, for instance, much the same views.

Except in its greater size and more Snipe-like colouring, Strickland's Snipe in all superficial (and, for all we know, in all deeper-lying) characters *is* astonishingly similar to the Chatham and Auckland Snipes. Its tarsus is Rusticoline (scutellate in front, reticulate behind), its legs and toes are

Rusticoline (short and thick with a pad under claw of hind toe), its bill is Rusticoline, its tail and wings are Gallinagine. But that these forms are relics of an ancient and cosmopolitan common ancestor hailing from the north, or that they are instances of parallelism, seems easier to believe than that they owe any thing of their similarity to an ancient Antarctic connecting-bridge. Moreover, in a review of the fishes obtained in the 'Terra Nova' Expedition, together with a critical examination of the evidence derived from the supposed relationships of *Thylacinus* of Tasmania and the Sparassodonts of the Patagonian Miocene strata, Mr. Tate Regan has lately dealt the hypothesis of an ancient Antarctic bridge connecting the Australian continent with South America in Tertiary times a severe blow (*cf.* Brit. Mus. Rep. 'Terra Nova' Exp., Fishes, 1914).

On the largest island of the Chatham group (Wharekauri —thirty-six miles by twenty-seven) fossil remains of the genus *Cœnocorypha* were discovered by H. O. Forbes in Pleistocene deposits, and received from him the specific name of *Gallinago chathamica.* In his original description Forbes simply states that this fossil form is "a very much larger species than *G. pusilla.* The bill is three inches in length" (*cf.* 'Ibis,' 1893, p. 545).

While studying the skeletal features of *C. pusilla*, Miss D. M. A. Bate kindly called my attention to the fact that there was a large collection of fossil bird-remains from Chatham Island in the British Museum collection, and among them we found specimens of the skulls of this fossil Snipe, *C. chathamica.* Except that their measurements are larger, the skulls of all the specimens of *C. chathamica* which I have examined agree in every particular with the skull of *C. pusilla.* It is interesting, however, to note that the præmaxillæ of these fossil specimens vary greatly in length, even if we allow for differences in the measurements due to sex. Thus in *C. chathamica* the following represent measurements from the tip of the præmaxillæ to a line forming the proximal ends of the outer processes of the nasals :—77 mm. and 75 mm. (in the two types contained in the Brit. Mus.

Coll.), 76 mm., 71 mm., 71 mm., 69 mm., 68 mm., and 63 mm. in six examples contained in Lord Rothschild's collection *; whereas the same measurements in the skull of the present existing *C. pusilla* works out at 54 mm.

Practically similar measurements to this last (54 mm. and 54·5 mm.) were noted in the skulls of two examples of *C. pusilla* found subfossil in the same sand-bank as contained the above subfossil remains of *C. chathamica*. Variation, as is well known, is very prone to run amok in the case of flightless birds on isolated islands where enemies are few, so that the varying measurements in *C. chathamica* might be taken to indicate toleration on the part of natural selection. On the other hand, it is just possible that they might be taken as indicative of a gradual grading of the one form into the other, so that in *C. pusilla* of the present day we have a *direct* lineal descendant of *C. chathamica*—or, in a word, that the two forms represent in reality one species, exhibiting a diminishing and continuous series of gradations. Such, however, does not necessarily follow, and it may be pointed out that in the Chatham group two distinct species of *Cabalus* are known to have existed, not to mention other forms.

The point seems to me to be worth consideration in connection with the question whether the normal process of evolution is a gradual or a discontinuous process.

At the present day *C. pusilla* has so far lost the power of flight that it can be easily knocked down by a stick, although when it first rises it is said to exhibit a feeble imitation of the twists and turns of its more northern congeners before it sinks to the ground some twenty yards from the spot where it rose. Other points in connection with the peculiarities of this interesting "Snipe" are as follows:—its eggs are not Gallinagine in either shape or colouring, the shape being a compromise between the typical Gallinagine and the typical Rusticoline form and the colouring being reminiscent of the Rail's eggs. The appearance of the nestling young is also aberrant in virtue of the absence of all markings whatever, the downy plumage above being of a uniform umber-brown coloration. The nestling young of *Chionis minor* of the Antarctic islands also exhibits this same uniform brown coloration, but it is to be noted that both birds seem to nest in as protected and as dark situations as they can find.

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* For permission to examine these fossil remains from the Chatham Islands now preserved in the Tring Museum I am greatly indebted to Lord Rothschild.

So far as one can gather from accounts of its habits, the Chatham Island Snipe seems to be more than usually nocturnal, for it is said to hide in the daytime in hollow trunks or tree-stumps, or in any scrap of cover protected from the light.

Description of the skull of Cœnocorypha *as seen from above.*

(*a*) If the skull of *C. pusilla* is examined from above and compared with similar aspects of the skulls of the Woodcock, Common Snipe, Jack-Snipe, and Dunlin (*cf.* Pl. VIII. figs. 3–7), we are at once struck with the fact that, as regards its general configuration and outline, the skull of the Chatham Island Snipe approaches the skull of the Dunlin much nearer than is the case with regard to either the Woodcock, the Common Snipe, or the Jack-Snipe. In *C. pusilla*, for instance, we miss the peculiar oval outline of the hinder part of the skull (that part caudad of the premaxillæ, nasals, etc.) so characteristic of the true Scolopacine type. In figs. 5–7 we see this oval or ovate configuration of the Scolopacine skull well depicted. In them, too, one notes that the outer margins of the lacrymals and the superior and inferior orbital rims merge one into the other in one continuous and smoothly curved outline. If this contrast between the two types of skull depicted in figures 3–7 is appreciated, it will be still more apparent in the case of the skull of the Painted Snipe (*Rhynchæa*) seen in fig. 1.

(*b*) The backward position of the orbital cavity, so characteristic of the true Snipe (Scolopacinæ), more especially of the Woodcocks, is also conspicuous by its absence in the Chatham Island Snipe, in which we have an approach to the Eroliine condition (*cf.* fig. 3). The same may be said in regard to the Painted Snipe (fig. 1).

(*c*) In the Chatham Island Snipe the outer edges of the orbital processes of the lacrymals make an angle with the orbital rims, instead of gradually merging with them in a continuous and uninterrupted curve, so characteristic of the typical Scolopacine form. A reference to the figures already indicated should make this point clear. In figures 5–7, for instance, the lacrymals are observed to be very typical ear-shaped processes gradually curving forwards, inwards, and downwards to a pointed extremity, while in fig. 4 the lacrymals of *C. pusilla* are projected laterally in a more abrupt and conspicuous way. Anteriorly (but this cannot be seen in the figure) the lacrymals of *C. pusilla* are noted to be Scolopacine in general shape, but they are aberrant in their narrow elongate form and in their more intimate contact with the outer nasal processes.

In respect of the lacrymals of the Painted Snipe these (in an actual specimen) are seen to come nearer the Vanelline form and shape than to any other form with which I am acquainted. In the true Scolopacine type, as we shall later see, the entire posterior surface of the descending lacrymals fuses with the antorbital plate, this part of the lacrymal almost losing its identity in the process. In *Rhynchœa* the descending lacrymal is free and independent throughout most of its extent. Its distal extremity merely fuses with the extero-inferior angle of the antorbital plate, and the whole lacrymal has, as I have said, very nearly the same form and shape as in *Vanellus*. Attention is also directed to the sharp outwardly projecting process formed by the orbital portion of the lacrymal in *Rhynchœa* and its un-Snipe-like appearance.

(*d*) If an imaginary line be drawn at right angles to the longitudinal axis of the skulls of the Chatham Island Snipe, Dunlin, and Painted Snipe from the hinder margins of the orbit of either side, we are at once struck with the much greater relative dimensions of the brain-pan caudad of this line, both in coronal and sagittal section, than obtains in the case of the Woodcock, Common Snipe, and Jack-Snipe, the comparative disproportion in dimensions being most noticeable in the case of the Woodcock and less so in the Jack-Snipe (*cf.* figures).

The same Snipe-like contrast is noted in the case of figure 2, which depicts the skull of *Homoptilura.*

(*e*) Another comparative point of distinction which may be observed by a reference to these figures is the conspicuous visibility of the quadrates in the case of the skulls of *C. pusilla*, *Erolia,* and *Rhynchæa*, as observed from this dorsal aspect, and the degree in which they project laterad of the lacrymals. In comparison with what obtains in the case of figs. 5–7 detailed description seems unnecessary ; but attention is called to the conspicuousness of the mandibular process in *Homoptilura* in comparison with that noted in *Scolopax.* The relative forward or backward position of the quadrates in all seven forms shown should be noted.

(*f*) It is, however, when we come to compare the interorbital region of all these forms that we are perhaps most struck with the anomalous appearance of the skull of the Chatham Island Snipe when viewed from this dorsal aspect. In *Scolopax*, *Gallinago*, *Lymnocryptes,* and *Homoptilura* this interorbital region is deeply grooved or furrowed, while its margins are raised, arched, moulded, corniced, and somewhat falcate. In *Cœnocorypha*, on the other hand, this same region appears narrow, smooth, and flat (the shallow furrow being only obvious on minute examination), its borders are more nearly parallel and its rims are neither raised, moulded, nor arched. A curious fact to be noted in the actual specimen is that the grooves for the supraorbital glands are situated on the very outer *edge* of the orbital rim—that is to say, that they look *directly outwards.* They can only be seen from a lateral aspect of the skull. In the genera above mentioned there are no supra-orbital glandular grooves. The general similarity of the interorbital region in *Cœnocorypha* to those of *Erolia* and *Rhynchæa* is to be noted. The interorbital region of *Cœnocorypha* is, however, suggestively Eroliine, that of *Rhynchæa* Tringine.

Narrow as the interorbital region is seen to be in the present-day skull of *C. pusilla* (fig. 4), it is still narrower in two subfossil examples dug up with other fossil bird-remains on the Chathams. The comparative measurements, for example, are as follows:—In *C. pusilla* the width was 4 mm.; whereas in the two subfossil forms of *C. pusilla* it was 3·5 mm. and 3·0 mm. respectively. The last-mentioned measurement represents roughly the width of the interorbital region in *Erolia alpina* (fig. 3).

Transferring our scrutiny to the anterior portion of the skull, it is obvious that in the Chatham Island Snipe the premaxillæ and associated processes are very distinctly more Rusticoline in form and structure than Gallinagine. The premaxillæ and premaxillary processes of a typical Woodcock and a typical Snipe are easily to be distinguished. Want of space forbids a detailed description of the differences, but in Pl. VIII. figs. 4–7 the four premaxillæ easily group themselves into two categories—Rusticoline and Gallinagine. We would draw attention, however, to the spatulate and flattened condition of the foveated ends of the premaxillæ in the Gallinagine type, to their thin flexible nature, to the flattening out of the culmen-ridge at the foveated extremity, to the way in which the more rounded and slender maxillary processes of the premaxillæ underlie the culmen-ridge in *Gallinago* (not, I think, due to elastic tension in the dried skeleton), and to the different detailed character and extent of the sculpturing, *in relief*, of the honeycomb-like circular or oval cells so characteristic of the foveated end of the bills in the Scolopacinæ and Eroliinæ (*cf.* also 'Ibis,' 1915, p. 612).

The premaxillæ of the Rusticoline type present exactly opposite conditions in regard to nearly all these points, but perhaps the most noticeable is the wide, flattened, and divaricate form of their maxillary processes (see figs. 5 and 7). As regards this last point, and others, the Jack-Snipe is an aberrant Gallinagine form.

Attention is here directed to the totally different nature of the premaxilla of the Painted Snipe (*cf.* fig. 1). It is quite unlike that of any other form of Wader. It is neither Rusticoline nor Gallinagine nor Eroliine, but might be looked upon as aberrantly Tringine. I can see in it no Ralline similarity. In *Homoptilura* the premaxilla is more Gallinagine than Rusticoline.

Finally, there is another point, viz., one in connection with the slope of the outer processes of the nasals. In the Woodcock and Chatham Island Snipe these slope gently forwards, making a very obtuse angle with the horizon. In *Gallinago* and *Lymnocryptes* the slope is more violent and the angle made with the horizon much less obtuse. In the actual specimens this point is more striking than it might appear from a description, so that in this respect the four forms group themselves into a Rusticoline pair and a Gallinagine pair.

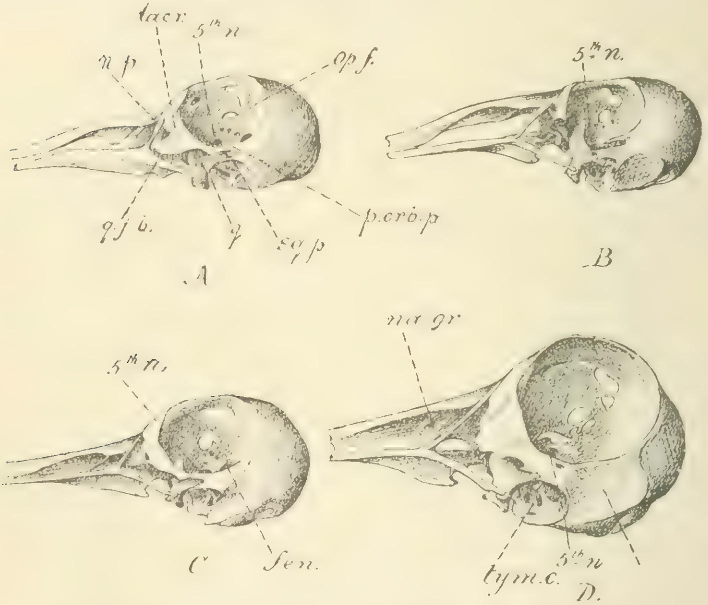
In *Rhynchæa* the outer nasal processes proceed forwards in the same plane with and also virtually parallel with the inner nasal processes—which is an anomalous condition, quite peculiar in itself. The angle made with the horizon is very obtuse indeed.

Skull viewed from the lateral aspect.

Viewed from this aspect the skull of the Chatham Island Snipe presents a feature which at once arrests our attention and marks this form as a particularly interesting one. In the Snipes of the genera *Scolopax*, *Gallinago*, and *Lymnocryptes*, an examination of the skulls reveals the fact that the descending process of the lacrymal, after almost losing its identity by fusion with the antorbital plate, is apparently continued as a thin ribbon-like plate of bone downwards and backwards, to eventually meet and fuse with the post-orbital process of the squamosal, so as to make the orbital rim as complete in front and below as it is above and behind (*cf.* text-figures 12, A, C, D).

In the Chatham Island Snipe, on the other hand—and this is perhaps its most interesting feature,—the descending process of the lacrymal after fusing with the extero-anterior surface of the antorbital plate is abruptly arrested in its course, and neither it nor the antorbital plate is continued downwards and backwards to join with the squamosal processes. *As a result, this antero-inferior portion of the orbital rim is deficient.*

Text-figure 12.



Lateral view of the skulls of :—A. *Lymnocryptes gallinula* ; B. *Cœnocorypha pusilla* ; C. *Gallinago gallinago* ; D. *Scolopax rusticola*.

fen., fenestra ; *lacr.*, lacrymal ; *na.gr.*, nasal groove ; *n.p.*, nasal process ; *op.f.*, optic foramen ; *q.j.b.*, quadratojugal bar ; *q.*, quadrate ; *p.orb.p.*, postorbital processes ; *sq.p.*, squamosal process ; *tymp.c.*, tympanic cavity ; *5th n.*, foramen of 5th nerve.

We therefore get a very similar condition of things to that which obtains in the rest of the Waders, in which we get no orbital rim below and in which we obtain an uninterrupted view of the whole of the quadrate (*cf.* text-figure 12, B).

This deficiency of the antero-inferior portion of the orbital rim, in a form which is undoubtedly Scolopacine, might very naturally be thought to be due to its having been lost in the specimen examined, or to its having broken away in the preparation of the skull, especially as there was only one skull available for examination. That this is not the case is rendered certain by the comparative examination carried out on seven or eight fossil examples of *C. chathamica*, and two of *C. pusilla*, in which exactly the same anatomical peculiarities are observable.

While the orbital rim in *C. pusilla* is deficient to this extent, it is to be noted, however, that the postorbital and squamosal processes, although preserving their identity, have been pushed or rotated forwards as if foreshadowing a complete union with the lacrymal or antorbital plate (*cf.* text-fig. 12, B). In this rotation forwards the quadrate, tympanic cavity, pterygoids, and palatines have shared. The amount of rotation forwards may be appreciated by noting the position of the quadrate in comparison with its position in a type like *Erolia*. Attention is also called to the large squamosal process in *C. pusilla*, and its gradual diminution in the Common and Jack-Snipe until its identity is practically lost in the Woodcock (*cf.* figures). In the Woodcock the postorbital and squamosal processes will be noticed to have been carried forwards to a greater extent than in the other three forms depicted in the text-figure.

The consideration of this rotation forwards of the inferior portions of the skull (in conjunction with the rotation backwards of other parts) brings us to a consideration of the *relative position of the quadrate* in the forms we have under consideration:—

(1) In the Woodcock the quadrate may be said to be extraorbital, since it has been pushed so far forward as to occupy a position below and in front of the orbital rim of bone forming the antero-inferior margin of the orbital

vacuity. Its ascending or orbital process lies parallel with and in the same plane as the descending lacrymal, by which it is very nearly completely hidden.

(2) In the Jack-Snipe the position of the quadrate is further back, and, shortly put, its ascending process may be said to lie neither inside nor outside the orbital space.

(3) In the Common Snipe the ascending process of the quadrate is intraorbital. It is seen projecting upwards caudad of the descending process of the lacrymal. The quadrate of the Common Snipe occupies, therefore, a position which is relatively further back than is the case with either the Woodcock or the Jack-Snipe.

(4) In the Chatham Island Snipe the quadrate lies further back still than it does in the Common Snipe.

(5) Finally, in the case of the Dunlin and its allies, as well as in *Rhynchaea*, the quadrate occupies a position which may be said to be normal for the Sandpipers, viz., one which is caudad of any of the above forms (*cf.* Pl. VIII. figs. 1 and 3).

On Plate VIII. the relative positions of the quadrate may be further studied from the dorsal aspect, and here we may observe that, as compared with the condition of things to be noted in the Dunlin and Painted Snipe, the more distad position of the quadrate and other neighbouring structures in the Chatham Island Snipe is well seen.

Associated with the forward position of the quadrate and other neighbouring structures, in the forms represented in text-figure 12, A, B, C, D, we may also call attention to the forward position of the foramina for the exit of the lower branches of the 5th nerve. The presence of fenestra in the alisphenoid, so well seen in figs. 5 and 6 on Pl. VIII., appears to be a Gallinagine character rather than a Rusticoline, although in some Woodcock skulls the presence of these is very faintly indicated. In one specimen examined it was indicated only on one side. The fenestra are potential rather than actual, being covered with a transparent film. They are also indicated in *Homoptilura.* Other points to be noticed from a lateral view of the skulls under consideration are as follows :—

(1) The relative length of the quadrato-jugal bar, as compared with the outer process of the nasal of either side, and their relative shapes.

In the Rusticoline type these processes are as nearly as possible equal, and if an imaginary line be drawn, so as to join their proximal extremities, an equilateral triangle is produced. In the Rusticoline type both these processes are, moreover, flattened or ribbon-shaped, and their angle of junction is acute. In respect of both these characters the Chatham Island Snipe is Rusticoline, although these points in text-figure 12, B are not quite clearly shown. *Homoptilura* is also Rusticoline in this respect.

In the typical Gallinagine form the quadrato-jugal bar is distinctly longer than the outer nasal process, and makes a right angle with it. Both processes are thin and rounded, instead of flattened. In the Jack-Snipe much the same condition as regards relative length of these bones and the angle formed at their junction is to be noticed, but in this form there is a considerable amount of abnormality in the form and shape of the maxilla and jugal. In the Painted Snipe the condition observed is Tringine, in the Dunlin Eroliine (for differences, compare 'Ibis,' 1915, p. 615).

(2) In the Chatham Island Snipe and in the Jack-Snipe the internasal septum is markedly deficient, as compared with the conditions noticed in the Woodcock and Common Snipe (and its allies, so far as my investigations have extended).

In both these latter forms the groove for the nasal branch of the 5th nerve is a prominent feature (*cf.* text-figures 12, C and D). In the Chatham Island Snipe and the Jack-Snipe the lower end of the nasal groove is notched or deficient.

(3) In both the Chatham Island Snipe and the Jack-Snipe the high culmen-ridge is a noticeable character. In *C. pusilla* the slope formed by the nasal processes of the premaxillæ is identical with a line representing the interorbital slope, and this condition is also noted in the Dunlin. The flattened edge of the orbital margin is to be noted in *C. pusilla.*

(4) Another very striking feature common to both the Woodcock and the Chatham Island Snipe is the flat, somewhat quadrilateral, and slightly roughened plane immediately posterior to the tympanic cavity. This is most highly developed in the Woodcock, and, so far as I am aware, has not previously been remarked upon. For want of a better term I have called it the squamosal plane. It is well marked in *Homoptilura.*

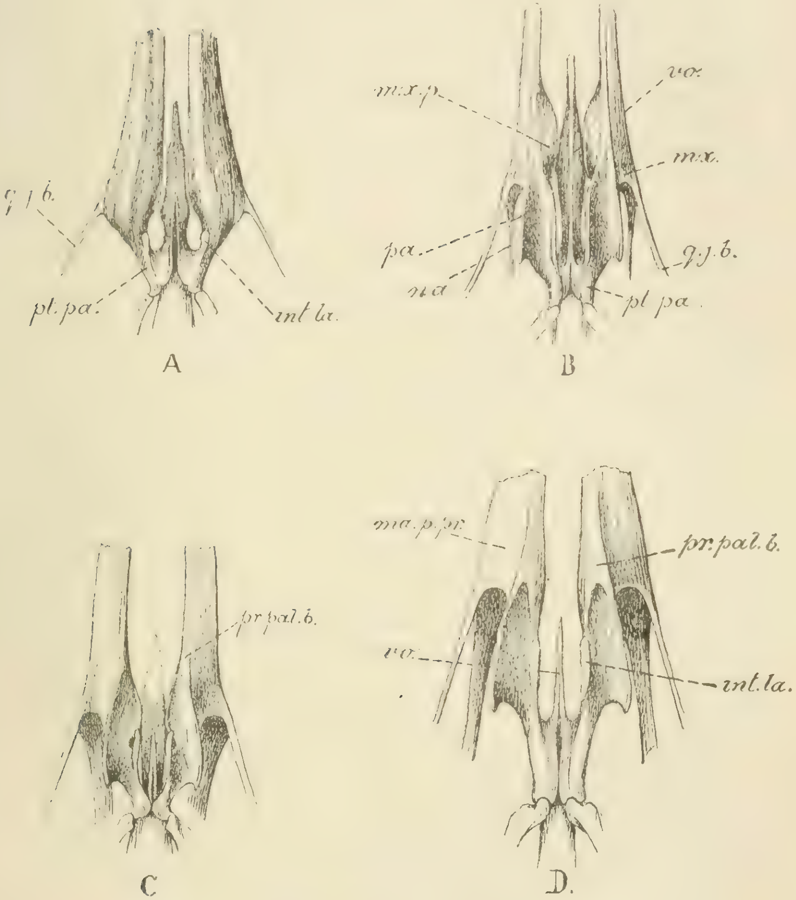
(5) Differences in the form and shape of the orbital rim are also to be noted:—In the Chatham Island Snipe this may be described as taking the form of an incompleted rhomboid with its angles rounded off—that is to say, it is reminiscent of the shape of the orbital rim in *Erolia.*

In the Woodcock the orbital rim is nearly circular, in the Common Snipe it is more nearly oval; while in the Jack-Snipe the rim is somewhat more circular than is the case with the Common Snipe.

The ventral aspect of the skull.

Transferring our attention from the lateral to the inferior aspect of the skull, we may direct attention more especially to the palatal region. In text-figure 13 the palatal region in the Chatham Island Snipe, Woodcock, Common Snipe, and Jack-Snipe is depicted, and the first thing which strikes one in a comparative examination of this region in the forms under consideration is the fact that, in as far as the several structures composing this region are concerned, the Chatham Island Snipe is neither Gallinagine nor quite typically Rusticoline. It may be said, however, to be much more

Text-figure 13.


q.j.b.
pt.pa.
int.la.
A
m.x.p.
vo.
mx.
pa.
na
q.j.b.
pt pa
B
pr.pal.b.
C
ma.p.pr.
pr.pal.b.
vo.
int.la.
D.

Palatal region of:—A. *Lymnocryptes*; B. *Gallinago*;
C. *Cœnocorypha*; D. *Scolopax.*

Int.la., inner lamina of the palatine; *mx.*, maxilla; *mx.p.*, maxillo-palatine process; *ma.p.pr.*, maxillary process of premaxilla; *na.*, outer nasal process of nasal bone; *pa.*, palatal plate; *pr.pal.b.*, prepalatal bar; *pt.pa.*, pterygoid process of palatine; *q.j.b.*, quadrato-jugal bar; *vo.*, vomer.

Rusticoline than Gallinagine. Leaving out of consideration for the present the palatal region of the Jack-Snipe, attention is directed to the following points as regards the palatal region of the other three forms :—

(*a*) In all three forms the postero-external angle of the palatal plate is prolonged backwards in a hook-shaped or falcate process, and this appears to be a special Scolopacine character (*cf.* Ibis, 1915, p. 612).

(*b*) In the Woodcock and Chatham Island Snipe the palatal plates are relatively shorter and wider than in the Common Snipe. The pterygoid processes of these structures in the two former types are, on the other hand, longer and more specialised at the expense of the palatal plate.

(*c*) In the Common Snipe the palatal portions of the maxillo-palatines are well developed, projecting inwards on either side to such an extent that they just fail to touch the outer margins of the vomer. They are long, narrow, and only slightly scroll-like structures, which have fused with the pre-palatal processes of the palatines throughout their whole extent.

In the Chatham Island Snipe the maxillo-palatines have also fused with the pre-palatal processes of the palatines, but their identity is not nearly so evident as in the Common Snipe. Their inner borders are slightly inverted or directed downwards, and they similarly just fail to touch the outer margin of the vomer of either side.

In the Woodcock the identity of the maxillo-palatines as viewed from this aspect is practically lost, and the free end of the vomer occupies an isolated position.

(*d*) In both the Chatham Island Snipe and the Woodcock the inner laminæ of the palatal plates are thickened and specialised, in contrast to those of the Common Snipe.

The forwardly projecting spur in which the inner laminæ of the palatal plate ends at its upper and anterior angle seems to be a Rusticoline character. It is present in *Scolopax* and *Cœnocorypha* (and was seen in fossil examples of the latter) but is not present in *Gallinago*. In this latter the distal end of the lamina glides away into and merges with the pre-palatine bar, on which it is lost.

Attention is also called to the following points :—

(*e*) The different form and structural features of the vomer in all three types, and especially to its diminutive proportions in the Woodcock. The reader will also note the different structural details in the bifid posterior extremities of the three vomers.

(*f*) The relative position of the maxillary in all three forms, its fenestration in the Common Snipe, and the Rusticoline character of this bone in the Chatham Island Snipe.

(*g*) The much thicker, wider, and flatter nasals in the Woodcock and Chatham Island Snipe and the more massive maxillary processes of their premaxillæ.

As regards the palatal region of the Jack-Snipe, it will be noticed that this has been so highly specialised as to present features which seem to be absolutely unique. So far as I am aware, this region in the Jack-Snipe has never been previously described. In stating the case for the generic differentiation of this form under the name *Lymnocryptes*, previous authors have confined their attention to the double notching of the posterior margin of the sternum (a very unreliable character), to the distinctive features of the syrinx, or to the aberrant nature of the coloration and colour-pattern of the plumage. Apparently they have quite overlooked the highly interesting morphology of the palatal region, which ought to justify or settle for ever the claim of the Jack-Snipe to distinctive generic rank.

In a way of speaking, the only part of the palatines of the Jack-Snipe which are "visible" are their pterygoid processes and the internal laminæ (interpalatine laminæ), which appear to have been pushed considerably backwards and to terminate anteriorly in conspicuous, forwardly projecting, and rounded processes. All the rest of the palatal plates, maxillo-palatines, and pre-palatal bars of either side, together with most of the maxillary and the maxillary process of the premaxilla, are involved or enwrapped in an elongate bony mass which forms a kind of pneumatic casing to these structures (*cf.* text-fig. 13, A). This peculiar pneumatic casing has the form of a very attenuated cone with its apex directed forwards. Distad it gradually merges with and is lost on the maxillary process of the premaxilla of either side (*cf.* text-fig. 13, A), proximad its base gradually merges with the pterygoid process of the palatal plate. It is to be noted that the outer nasal processes are not visible in this ventral view of the palatal region of *Lymnocryptes*, since they are hidden in the actual skeleton by a forwardly projecting plate of bone given off from the mesethmoid.

As regards other characters of the ventral aspect of the skull, it may be shortly stated that the form, structure, and disposition of the occipitals, basioccipital, precondylar fossa, foramen magnum, foramina for cranial nerves, basisphenoid, basitemporal, and pterygoids in *C. pusilla* are all Rusticoline, rather than Gallinagine. The lambdoidal ridge is not so well marked as in *Scolopax*.

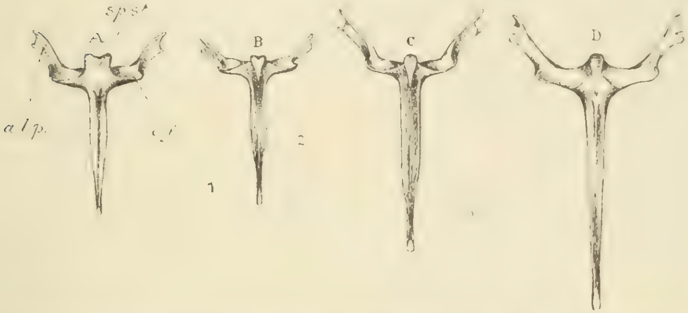
A feature possessed by *Cœnocorypha*, and which is very characteristic of the Scolopacinæ, is the manner in which the basisphenoidal rostrum together with the basisphenoids and basitemporal are bent sharply upwards so as to make an obvious angle with the basioccipital. This Scolopacine character is rendered very obvious if the base of the skull of an Eroliine or a Tringine Wader is compared with that of a true Snipe. In the Jack-Snipe, however, the condition is not so marked. In *Rhynchæa* the condition is Tringine.

Other skeletal characters of Cœnocorypha.

As regards the rest of the skeletal structures of *C. pusilla*, I shall simply refer to a few points which seem worthy of notice :—

Sternum.—Although the arrangement of the notching at the hinder end of the sternal plate seems—at any rate, in regard to the Waders—to help us very little from a taxonomic standpoint, and, indeed, to be at times more misleading than useful, yet it may be pointed out that in *C. pusilla* the notching of this part of the sternum is typically Gallinagine in character (that is to say, that it agrees exactly with the condition found in the Common Snipe). How unreliable this character is, may be gathered from the fact that the hinder margin of the sternum in the Painted Snipe presents the same Gallinagine* features, while, on the other hand, in regard to its skull, there is practically not a single Gallinagine character which I can discover. In the Jack-Snipe, too, this part of the sternum is four-notched, while in the Woodcock a fenestrated condition is to be noted in the region of the inner notch.

Text-figure 14.



Anterior view of the sterna of:—A. *Cænocorypha*; B. *Lymnocryptes*; C. *Gallinago*; D. *Scolopax*.

a.l.p., anterior lateral process; *c.f.*, coracoidal facet; *sp.st.*, spina sterni.

With regard to the forward end of the sternum, an examination of text-figure 14 reveals the fact that in *Scolopax*, *Gallinago*, *Lymnocryptes*, and *Cænocorypha* the structural peculiarities of the coracoidal facets and the *spina sterni* have their own distinctive features.

In *C. pusilla* however the spina sterni is worth noting. It is bifid and wide from side to side, is seated directly between the coracoidal articulating facets, and looks directly upwards and slightly forwards. It is to be noted that the spina sterni of the Jack-Snipe has also a tendency to be bifid.

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* Taking the sum of the characters presented by the sternum of *Rhynchæa*, it would seem to be a nice point to decide whether they leant towards a Gallinagine, a Ralline, or a Jacanidine picture.

The coracoidal facets of the Woodcock are somewhat specialised. In all four forms the shape of the anterior lateral process is distinctively peculiar. This is especially evident in the Woodcock, but *C. pusilla*, in respect of the form of this process, agrees with the Woodcock rather than with the Snipe. The hypocleideum in *C. pusilla* is Gallinagine rather than Rusticoline. In the latter form it is very long and narrow. The carina of *C. pusilla* shows no evidence of degeneration.

Pelvis.—In *C. pusilla* it may be shortly said that the characters presented by the pelvis are, on the whole, more Gallinagine than Rusticoline. It is to be noted, however, that the upper margins of the preacetabular ilia are separated from one another and from the line of the vertebral spines by a considerable distance, and in this respect they present a Rusticoline character. It may also be pointed out that in *Scolopax rusticola* the iliac recesses for the lodgement of the kidneys present posteriorly the form of deep and conspicuous angular pouches, triangular in section and with flattened sides, converging to a sharp apex. The iliac ridges which mark the commencement of these pouch-like recesses are sharp, thin, and conspicuous. These sharply marked renal fossæ are apparently peculiar to the purely Rusticoline form, but there is a suggestion of them in *C. pusilla*, which is quite absent in the Common Snipe.

In *Rhynchæa* the pelvis presents features which, in respect of the blunt or square-ended preacetabular ilia and the somewhat pocket-like renal fossæ, are reminiscent of the Scolopacinæ; the pectineal processes are conspicuous by their absence, however, and there is not the slightest hint of Ralline factors in the configuration of the whole pelvis.

As regards the arm and leg bones of *C. pusilla*, I do not propose to offer any remarks, beyond pointing out, that in the matter of length, the humerus, ulna, and middle metacarpus (+phalanges) are all equal; whereas in *Gallinago* and *Lymnocryptes* the ulna is longer than the humerus, and the metacarpus (+phalanges) than the ulna. The ectepicondylar process in *C. pusilla* is ill developed.

Conclusions and Queries.

(1) *Cœnocorypha pusilla* is neither a typical Woodcock nor a typical Snipe, although it is much more Rusticoline than Gallinagine. It appears to be a generalised or primitive Scolopacine form. It may possibly be regarded as a relic of an ancient stock which at one time had a more northerly or a more general distribution, and from which stock the present-day Woodcocks and Snipes arose by still further specialisation.

(2) The status of the genus *Cœnocorypha*, originated by Gray and re-instated by Mr. G. M. Mathews (Ibis, 1913, p. 261), is amply confirmed by osteological examination. It is interesting to note that neither Gray, Seebohm, nor Mathews had studied the skeletal features of this form, but that, nevertheless, by the examination of what are generally held to be superficial characters, they arrived at a near appreciation of the peculiarities of this interesting Snipe-like form.

(3) Judging merely by the only form (*Homoptilura undulata gigantea*) whose skull I have been able to examine, the South American "semi-Woodcocks" have no close affinity with the "semi-Woodcocks" of the New Zealand subregion. It appears probable that they represent relics of ancient disconnected stages in the evolution of the true Woodcocks from a primitive Snipe-like form.

(4) The exact relationships of the Eroliinæ (the Dunlin association) to the Scolopacinæ would form an interesting subject of debate. Do the former represent a more direct and progressive line of descent from some common ancestral stock? Are the latter merely specialised and indirect offsets from this same stock? Does *Cœnocorypha* represent one of the first stages in the gradual process of evolution of the

true Snipe-form from the Eroliine stirp, or do the Woodcocks, the Snipes, the Jack-Snipe, and the Chatham Island Snipe merely represent so many sudden mutational forms derived from a common but independent Scolopacine stock?

(5) The so-called Painted Snipe (*Rhynchæa*) is neither Scolopacine nor Ralline. It is, however, Limicoline, possibly a surviving relic of a primitive Limicoline stock.

(6) Judging from the slight change in the relative proportions of the constituent bones of the pectoral limb and the absence of any signs of degeneration in the carina of the sternum, the diminishing powers of flight in *C. pusilla* is not a matter of long standing.

(7) *Cœnocorypha pusilla* and its antipodean allies are "living fossils." They belong, strictly speaking, not to the present, but to a past geological period. The fact that they still exist and that we are still privileged to see them "in the flesh" is an 'accident,' the result of the isolation of the Chathams, Aucklands, and Snares, and their consequent freedom until recent times from carnivorous animals. They have persisted in this their last ultra-southern retreat beyond, so to speak, the allotted span of their race, and we may reasonably regard this generalised genus of "Snipes" as having formerly a much more extended distribution.

XXXVI.—*Note on the Nestling Plumage of the Asiatic Golden Plover* (Charadrius dominicanus fulvus). By MAUD D. HAVILAND.

THE young of this species was first described by Mr. H. L. Popham (Ibis, 1898, p. 512) from specimens that he obtained on the lower Yenesei. He describes it as being more spotted, with white about the sides of the head and neck, than are the young of *Charadrius apricarius*.

On July 20, 1914, I obtained four newly-hatched chicks from an identified nest on the tundra near Golchika, lower

Yenesei. In comparing them with such specimens of the common Golden Plover as I have been able to obtain, it is apparent that in both species the markings follow the same pattern, but in different proportions. In this they differ from the chick of *Squatarola squatarola,* whose markings follow no definite pattern. In the young *C. apricarius* there is a yellow tract immediately above and behind the eye. Above this and following the same curve there is a more or less well-defined black streak. Upon the latter and much constricted at the centre over the eye, is a whitish streak. This white streak varies much in different individuals. Sometimes it is hardly marked ; at other times it is quite distinct. In the latter case it seems to occur together with a white spot at the base of the upper mandible, and with a certain proportion of grey mingled with the mottling of the nape. Under the eye is a very well-defined pale patch bounded below by a broad black stripe margined with yellow, which distinguishes the down of the cheek from that of the throat.

In *C. fulvus* the white patch above the orbit has greatly increased in width until the black and yellow bands below it have been, as it were, crowded together on to the eyelid, and instead of lying parallel to one another, they have broken alternately to dovetail, like two cogs, to use a mechanic's simile, which have meshed together. Below the eye the black and yellow band has shrunk to a broken streak, and there is no division between the white down of the throat and that of the cheek. The body-down is more mixed with grey than in the western species, but the longitudinal dorsal bands are not well defined.

The yellow of the down is of a different tint in the two species, being ochre in *C. apricarius* and gamboge in *C. fulvus.* The suggestion has been made to me that the head of *C. apricarius* is stouter and broader than that of *C. fulvus*, but that appearance would depend much on after-treatment of the skin.

XXXVII.—*On Birds collected by Mr. C. Boden Kloss, F.R.G.S., M.B.O.U., on the Coast and Islands of South-eastern Siam.* By H. C. Robinson, M.B.O.U., C.M.Z.S. *With Field-Notes by the Collector.*

The collection of birds made by Mr. Kloss on the coast of south-eastern Siam, bordering the French possession of Cambodia, and on the adjacent islands appears worthy of record in detail, on account of the poverty of the literature on, and specimens from, this region.

With the exception of the series collected by the French traveller Mouhot in much the same area as that covered by Mr. Kloss, I am aware of no specimens in English Museums. Mouhot's birds, moreover, were never listed, though the reptiles and mammals secured by him formed the subject of reports by Drs. Gray and Günther in the 'Proceedings of the Zoological Society of London,' while one or two of his birds were cursorily described by the Marquis of Tweeddale.

Owing to the fact that the collection of birds was only a secondary object of Mr. Kloss's expedition, the series obtained is not very large either in numbers of specimens or in species; but, nevertheless, several specimens of considerable interest as bearing on zoogeographical problems were secured. Amongst these may be mentioned *Zoothera marginata*, *Anthocincla phayrii*, and *Myiophoneus eugenii*, species characteristic of the evergreen forests of the Salwin and Tenasserim, which are unknown in the alluvial plain of Siam proper, but which have, neverthless, circled the head-waters of the Menam and reappeared on its eastern border. *Myiophoneus klossii* and *Pyrotrogon erythrocephalus klossii* are both distinct and interesting new forms, while *Setaria rufifrons* adds another to the small group of species known from Siam, Java, and occasionally Borneo, but unrepresented in the Malay Peninsula and Sumatra.

Cyornis pallidipes hainana is an unexpected addition to the fauna, while it is surprising to find that the local Dial Bird belongs to the Malayan race, *Copsychus saularis musicus*

(Raffles), and not to the typical Indian form, which is the one met with in Siam proper.

I have reduced the synonymy to the narrowest limits possible, in most cases merely giving the reference to the 'British Museum Catalogue' (quoted as Cat.); to Count Nils Gyldenstolpe's paper, "Birds collected by the Swedish Zoological Expedition to Siam, 1911–1912," published in the Kongl. Svenska Vetenskaps-Akademiens Handlingar, Band 50, No. 8, 1913 (quoted as Gyldenstolpe); and to Stuart Baker's work on 'Indian Pigeons and Doves,' 1913 (quoted as Stuart Baker). The classification and nomenclature are those of Sharpe's Hand-list, unless otherwise stated.

Note on the localities visited, by Mr. Boden Kloss.

Towards the end of 1914 I spent a couple of months' vacation-leave in making a collection of vertebrates in Siam.

After a few days in Bangkok I proceeded by steamer with three Dyak collectors to Chantabun, and there, hiring a native sailing-boat, passed six weeks in cruising and camping on the coast and islands to the south-east, getting in altogether about 33 working days ashore.

Island races of mammals were the principal object of the excursion, as the bird population of the smaller islands, on which a good deal of the time was passed, was, as usual in similar situations, of the poorest. The ornithological results are therefore not as complete as they might have been, had attention been paid to birds primarily, but they serve to show that our knowledge of the avifauna of this part of Indo-China is, as pointed out by Mr. Robinson, who has kindly taken the account of the birds off my hands, by no means final. The mainland specimens were the result of ten days' collecting at four stations along a fifty-mile strip of coast, each of the camps being situated near a village surrounded by clearings with forest near at hand, so that the scrub and the jungle fauna are both represented.

Koh Chang, an island on which I camped for eight days, is about 15 miles long and 7 wide. It is very hilly, and its highest peak, one of a number, rises to 2446 feet. Wherever possible the coastal area has been cleared and planted with cocoa-nuts, rice, and vegetables ; there exists also a certain amount of old cultivated land which has lapsed into scrub or forms grazing fields for buffalo. The strait which separates it from the mainland is only four fathoms deep, and the western entrance narrows to a breadth of three miles, though, as much of the Chantabun province is an alluvial plain of recent formation, the island was once much more isolated and probably stood in deeper water. It is northernmost of the little archipelago.

Koh* Kut (where a week was spent), 15 miles S.S.E. of this and about 18 miles from the land to the eastwards, is the southern island of the group and stands just within the ten-fathom contour line ; it is some 13 miles long by 5 wide, elevated, and has a peak of 1171 feet. It is uninhabited, but swarms with ticks, which made our week's sojourn on it a most uncomfortable experience, and is covered with forest to the water's edge, as are the islands between it and Koh Chang, with the exception of Koh Mak, which is about 4 miles long ; this is low, and is being turned into a cocoanut plantation.

The remaining five islands visited, none of them more than a couple of miles in length, are all hilly and, other than Koh Rang, which is the most seaward of the group and stands in 12 or 13 fathoms of water, rise from depths of four to eight fathoms only. Only a day or two was given to each of these.

On the mainland, Lem Ngop lies within the Koh Chang strait and Ok Yam (or Jam) is eastward of the centre of Koh Kut ; it is just within French territory, as the present boundary between Siam and Cambodia comes out on the coast half a mile to the west of it. Klong Yai and Klong Menao are places to the north of Ok Yam.

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* Ko, Koh, Kaw (Siamese)=Island.

Systematic List.

Tropicoperdix chloropus.

Arboricola chloropus Tickell; Ogilvie-Grant, Cat. xxii. 1893, p. 219.

Tropicoperdix chloropus Gyldenstolpe, p. 66.

a. ♀. Klong Menao *, S.E. Siam. 12 Jan., 1915.

"Bill olive; feet pale dull yellowish green. The only specimen obtained was caught by the head in a rat-trap baited with cocoa-nut."—C. B. K.

Gallus gallus.

Gallus gallus (Linn.); Ogilvie-Grant, Cat. xxii. 1893, p. 344.

Gallus ferrugineus Gm.; Gyldenstolpe, p. 67.

a, b. 1 ♂ imm., 1 ♀. Klong Menao, S.E. Siam., 11 Jan., 1915.

Male. "Iris hazel; bare head-skin deep fleshy pink, a blue-white neck-patch; bill horny, lower mandible paler; feet dark stone-grey. *Female.* Iris hazel; bare head-skin deep fleshy; bill horny; feet dark stone-grey.

"A third example, a young cock-bird, which was bought freshly trapped, became perfectly tame in two or three days. It was taken alive to Bangkok, where it attached itself to a flock of domestic fowls."—C. B. K.

Turnix blanfordi.

Turnix blanfordi Blyth; Ogilvie-Grant, Cat. xxii. 1893, p. 542.

a. ♀ imm. Ok Yam, Franco-Siamese Boundary (on coast). 2 Jan., 1915.

"Upper mandible horny, lower dull yellow; tarsi yellow, toes brown."—C. B. K.

Treron curvirostra nipalensis.

Treron nipalensis (Hodgs.); Salvad. Cat. xxi. 1893, p. 34; Gyldenstolpe, p. 65; Stuart Baker, 1914, p. 66, pl. v.

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* This name is not shown on Admiralty charts, but it refers to the river-mouth two miles north of Kao Hua Maew (Cat's Head Hill).

a. 1 ♀. Koh Kut I.*, S.E. Siam. 30 Dec., 1914.

b. 1 ♂. Ok Yam, Franco-Siamese Boundary (on coast). 2 Jan., 1915.

"*Male.* Iris light yellow; orbital skin pale apple-green; bill pale greenish ivory, nostrils and gape crimson; feet carmine. *Female.* Iris orange; bill pale greenish ivory, cere and base of lower mandible crimson; feet carmine, soles yellowish.

"Found at Ok Yam in association with the common green pigeon, but in much smaller numbers."—C. B. K.

Stuart Baker states that the bird from the northern parts of the Malay Peninsula belongs to this continental race, while that from the southern portions is to be referred to the typical form *T. curvirostra curvirostra*, whose type locality appears to be Sumatra. The series in the F. M. S. Museums bears out his contention in the main, though it is to be noted that while skins from Pelarit in Perlis and from Bandon, collected in October and May, belong to the northern form, others from Trang, to the *north* of the former locality, dated December and January, are of the *southern* race.

It is perhaps not generally recognised that species both of the *Treroninæ* and *Ptilopodinæ* perform local migrations, sometimes apparently of considerable extent. The present species is noteworthy in this respect, and is often found at some distance out to sea in the Straits of Malacca. On Feb. 15, 1915, we picked up at sea, in the middle of the straits about 30 miles from the Selangor coast and about 40 from Sumatra, a male which had dropped into the water so recently that its plumage was practically dry. Both this species and *Ptilinopus jambu* frequently alight on ships at sea in the Straits of Malacca, while *Ducula badia*, normally an inhabitant of the high mountains only, sometimes frequents the mangroves on the coast, in order, as the Malays say, to drink the salt water. Until more, therefore, is known of local migrations and the routes followed, it is dangerous to dogmatise on apparent differences in the races inhabiting adjacent land areas separated only by narrow belts of sea.

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* I have given all the localities of my insular specimens as "Island" on the labels. Though the word "Koh" has that meaning, few people are familiar with the Siamese language and I have preferred rather to be redundant than obscure.—C. B. K.

Osmotreron bicincta domvilii.

Osmotreron domvilii Swinh. Ibis, 1870, p. 354.

Osmotreron bicincta (Jerd.); Salvad. (part.) Cat. xxi. 1893, p. 57.

Treron bicincta domvilii Hartert, Nov. Zool. xvii. 1910, p. 193.

Osmotreron bicincta domvilii Stuart Baker, p. 48.

a. 1 ♂. Ok Yam, Franco-Siamese Boundary (on coast). 3 Jan., 1915.

The single specimen noted appears to belong to this form; the grey nuchal patch is decidedly less extensive than is the case in a small series from the Malay Peninsula with which I have compared it. Wing 149 mm.

"Shot in company with *O. vernans*."—C. B. K.

Osmotreron vernans.

Osmotreron vernans (Linn.); Salvad. Cat. xxi. 1893, p. 60; Stuart Baker, p. 59.

a, b. 1 ♂, 1 ♀. Koh Chang I., S.E. Siam. 5–11 Dec., 1914.

c–f. 3 ♂, 1 ♀. Ok Yam, Franco-Siamese Boundary (on coast). 1–3 Jan., 1915.

g. 1 ♀. Lem Ngop, S.E. Siam. 15 Jan., 1915.

"*Male*: Iris yellow, reddish yellow, or inner ring blue, outer lilac; feet pale plumbeous, cere greenish, feet maroon. *Female*: Iris pale purple (mauve); bill, tip pale plumbeous, base yellowish green; feet maroon.

"Extremely common at Ok Yam, where it frequented the single, and small clumps of, trees dotted about the common land surrounding the village."—C. B. K.

Differs neither in size nor colour from Malayan specimens.

Carpophaga ænea.

Carpophaga ænea (Linn.); Salvad. Cat. xxi. 1893, p. 190; Gyldenstolpe, p. 66; Stuart Baker, p. 91, pl. vii.

a, b. 1 ♂, 1 ♀. Koh Kut I., S.E. Siam. 26–27 Dec., 1914.
c, d. 1 ♂, 1 ♀. Koh Rang I., S.E. Siam. 21 Dec., 1914.
e. ? Koh Mehsi, East I.*, S.E. Siam. 13 Dec., 1914.
f, g. 1 ♂, 1 ♀. Koh Klum I., S.E. Siam. 17–18 Dec., 1914.

"Iris crimson, eyelids dull red; bill plumbeous blue, base of culmen and nostrils plum-red; feet plum-coloured.

"Very common on all the islands visited, where the loud booming note was heard all day long."—C. B. K.

The dimensions of this series, compared with that of specimens from the Malay Peninsula, are rather small; the bird from Koh Klum (wing 209 mm.) is especially so and is more richly coloured, the top of the head being more vinaceous.

Streptopelia suratensis tigrina.

Turtur tigrinus (Temm. & Knip); Salvad. Cat. xxi. 1893, p. 440; Gyldenstolpe, p. 66.

Streptopelia suratensis tigrina Stuart Baker, p. 210, pl. xxi.

a. 1 ♀. Koh Mak I., S.E. Siam. 20 Dec., 1914.
b. 1 ♂. Ok Yam, Franco-Siamese Boundary (on coast). 5 Jan., 1915.

"Iris flesh or yellow; bill black; feet plum-coloured.

"Probably introduced on Koh Mak, which is inhabited and being turned into a cocoa-nut plantation."—C. B. K.

Chalcophaps indica.

Chalcophaps indica (Linn.); Salvad. Cat. xxi. 1893, p. 515; Gyldenstolpe, p. 66; Stuart Baker, p. 121, pl. xi.

a. 1 ♀. Koh Mehsi, West I., S.E. Siam. 14 Dec., 1914.

"Orbital skin grey, the edges of the eyelids plum-colour; bill coral-red, base plum-coloured; feet livid plum."—C. B. K.

Stuart Baker's figure of the female is decidedly inaccurate, as the forehead is never so devoid of grey as is shown in the drawing.

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* The two islands of Koh Mehsi, West and East, are shown respectively on Admiralty charts as "Ile du Pic" and "Le Chameau," but I have preferred to use the names by which they are known locally.

Amaurornis phœnicura chinensis.

Amaurornis phœnicura (Forst.); Sharpe, Cat. xxiii. 1894, p. 156; Gyldenstolpe, p. 68.

Amaurornis phœnicura chinensis (Bodd.); Stresemann, Nov. Zool. xx. 1913, p. 304.

a. 1 ♂. Klong Yai, S.E. Siam. 6 Jan., 1915.

"Bill dull green, the cere brownish; feet olive-brown, tarsi tinged yellow."—C. B. K.

Rallina superciliaris.

Rallina superciliaris (Eyton); Sharpe, Cat. xxiii. 1894, p. 76.

a. 1 ♂. Ok Yam, Franco-Siamese Boundary (on coast). 3 Jan., 1915.

"Iris ochraceous; bill brownish black, base of lower mandible yellowish; feet brownish black."—C. B. K.

Sarcogrammus indicus atrinuchalis.

Sarcogrammus atrinuchalis Blyth; Sharpe, Cat. xxiv. 1896, p. 152; Gyldenstolpe, p. 68.

a. 1 ♀. Ok Yam, Franco-Siamese Boundary (on coast). 2 Jan., 1915.

b. 1 ♀. Klong Yai, S.E. Siam. 5 Jan. 1915.

"Iris crimson; orbital skin and wattles carmine; bill, proximal half carmine, distal half black; feet olive-yellow, tarsi dull yellow.

"Frequently seen stalking about on the buffalo grazing ground."—C. B. K.

Totanus calidris.

Totanus calidris (Linn.); Sharpe, Cat. xxiv. 1896, p. 414.

a, b. 1 ♂, 1 ♀. Klong Yai, S.E. Siam. 5 Jan., 1915.

"Iris dark; bill sooty, base of lower mandible orange-brown; feet dull orange."—C. B. K.

Tringoides hypoleucus.

Tringoides hypoleucus (Linn.); Sharpe, Cat. xxiv. 1896, p. 456; Gyldenstolpe, p. 69.

a. 1 ♂. Klong Yai, S.E. Siam. 6 Jan., 1915.

"Bill brown; feet stone-grey."—C. B. K.

Glottis nebularius.

Glottis nebularius (Gunner); Sharpe, Cat. xxiv. 1896, p. 480; Gyldenstolpe, p. 70.

a. 1 ♂. Klong Yai, S.E. Siam. 5 Jan., 1915.

"Iris dark; bill, proximal half plumbeous, distal black; feet stone-grey."—C. B. K.

A rather small specimen, having the tarsus 2·25 and the culmen 2·0 inches.

Ardea sumatrana.

Ardea sumatrana Raffles; Sharpe, Cat. xxvi. 1898, p. 68.

a. 1. Koh Mehsi, West I., S.E. Siam. 15 Dec. 1914.

"Iris yellow; bill black, tip of lower mandible yellow, the base fleshy; feet and lower tarsi brownish black, legs and upper tarsi brownish black and yellow, the front part darkest."—C. B. K.

Demiegretta sacra.

Demiegretta sacra (Gm.); Sharpe, Cat. xxvi. 1898, p. 136.

a. 1 ♂. Koh Klum I., S.E. Siam. 17 Dec., 1914.

b. 1 ♀. Koh Kra I., S.E. Siam. 15 Dec., 1914.

"Iris yellow; upper mandible brownish black, lower greyish brown, tip dull yellowish; feet olive-yellow, front of tarsi and tibiæ black, soles bright yellow."—C. B. K.

Both these Reef-Herons are in the grey phase, which along the shores of the Malay Peninsula and Indo-China is by far the commonest.

Ardeola bacchus.

Ardeola bacchus (Bp.); Sharpe, Cat. xxvi. 1898, p. 211; Gyldenstolpe, p. 73.

a. 1 ♂. Koh Mak I., S.E. Siam. 20 Dec., 1914.

"Iris yellow; orbital skin bright yellow-green; upper mandible black, lower dull greenish yellow, tip black; feet bright yellow-green."—C. B. K.

In winter plumage this species is rather difficult to distinguish from its near ally, *A. grayi* (Sykes), which is found more or less in the same regions; the present species is, however, rather the larger of the two, appearing to have the wing always rather more than 9·0 inches.

Accipiter gularis.

Astur gularis Temm. & Schleg. in Siebold's Faun. Japon., Aves, 1844, p. 5, pl. ii.

Accipiter gularis Hartert, Nov. Zool. xvii. 1910, p. 211.

a. ♀ ad. Klong Yai, S.E. Siam. 4 Jan., 1915.

b. ♂ ad. Ok Yam, Franco-Siamese Boundary (on coast). 3 Jan., 1915.

"*Male.* Iris orange, bill plumbeous horny; feet yellowish, tarsi olive-tinged. *Female.* Iris yellow; bill horny grey, cere yellowish green; feet greenish yellow."—C. B. K.

Partly from their migratory habits and partly from the fact that adult birds form only a small proportion of the skins available in collections, the sparrow-hawks of this group are some of the most difficult of birds to identify satisfactorily.

A recent study of Malayan and Sumatran-Malayan material has led me independently to the same conclusions as those come to by Hartert in the article above quoted on the Birds of Hainan (Nov. Zool. xvii. pp. 208–212).

Of the pair listed the female has the wing 192 mm., the upper surface brownish grey, the head darker and greyer with the feathers of the nape white at the base. The throat is white, unbarred, with a fine dark median hair-line. The whole under surface from the throat down, including the thighs, is regularly barred white and pinkish liver-brown. The under tail-coverts are pure white. The fourth primary is longest, the third nearly equal to it, and the fifth considerably shorter. The male has the wing 163 mm., the upper surface pure grey, darker on the head, the tail with three not very distinct dark bands and a terminal band; middle of the throat with a broad ashy-grey median stripe; throat and upper breast pinkish brown, with ill-defined greyish longitudinal stripes on the sides. Lower breast and abdomen barred white and pinkish brown, the thigh barred with white and greyish brown, the under tail-coverts pure white. Fourth primary longest, not much exceeding the third and fifth, which are subequal.

Accipiter affinis.

Accipiter virgatus, subsp. *affinis,* Gurney. List of Diurn. Birds of Prey, 1884, pp. 39, 168–73.

Accipiter affinis Hartert, Nov. Zool. xvii. 1910, p. 211.

a. ♂ imm. Koh Kut I., S.E. Siam. 30 Dec., 1914.

b. ♂ imm. Koh Rang I., S.E. Siam. 21 Dec., 1914.

a. "Iris ochraceous, eyelid edge greenish yellow; bill slaty horn, cere and gonys yellowish green; feet dull yellow.

b. "Iris yellow, orbital skin greenish; bill bluish horn, cere apple-green; feet greenish yellow."—C. B. K.

These birds are both immature, as is shown by the pale edgings to the feathers of the upper surface, which is dark brown, with a greyish tinge, the head much darker. Three rather bread clearly defined dark bars on the tail and a dark tip. Throat white, with a somewhat broad dark median streak. Crop-region with broad longitudinal stripes of dark brown. Rest of the under surface broadly barred with reddish brown, the bars more marked on the flanks. Thighs regularly barred with white and reddish brown. Under tail-coverts white or slightly flecked with reddish brown. Fourth primary longest, third nearly equal to it, fifth rather shorter. Wing 165, 166 mm.

There is little doubt that these two specimens represent the Himalayan *A. affinis* in winter quarters. Specimens precisely agreeing with them except in size have been shot in considerable numbers on small islands in the Straits of Malacca, in company, however, with adult birds with little or no barring on the under surface, that can with difficulty be separated from the true Sundaic *A. virgatus.*

Pernis cristatus.

Pernis cristatus Cuvier, Règne Anim. i. 1829, p. 335.

Pternis ptilonorhynchus (Temm.); Sharpe, Cat. i. 1874, p. 347.

a. 1 ♂. Lem Ngop, S.E. Siam. 14 Jan., 1915.

"Iris hazel; bill plumbeous horny; feet dull yellow." —C. B. K.

This appears to be a fully adult male, the crest being black, about an inch long, the feathers white at the bases. Colour above brownish black, darker on the head; sides of the head grey, paler on the lores, chin dark grey, throat black; rest of under surface dark brown, the bases of the feathers white. Tail with three greyish-white bars and a narrow tip, the two upper bars narrow. Wing 16·9 in.

Spilornis cheela rutherfordi.

Spilornis rutherfordi Swinh. Ibis, 1870, p. 85.

Spilornis cheela (part.), Sharpe, Cat. i. 1874, p. 287; Blanford, Faun. Brit. Ind., Birds, iii. 1895, p. 357.

Spilornis cheela rutherfordi Gyldenstolpe, p. 62.

a. ♀ vix ad. Koh Mak I., S.E. Siam. 19 Dec., 1914.

"Iris lemon; orbital skin and cere lemon; bill plumbeous horny; feet lemon, claws black."—C. B. K.

This bird is somewhat immature, having the ends of the secondaries broadly and the feathers of the upper wing-coverts and back narrowly tipped with white. Chin and throat brown, and breast obscurely undulated, but not distinctly barred. Wing about 16·5 inches, decidedly larger than specimens from the south of the Malay Peninsula, but about the same size as those from Trang and Bandon. *S. c. rutherfordi* and *S. c. pallidus* Walden grade into each other.

Ketupa ketupa.

Ketupa ketupa (Horsf.); Sharpe, Hand-l. i. 1899, p. 281.

Ketupa javanensis Less.; Sharpe, Cat. ii. 1875, p. 8; Gyldenstolpe, p. 61.

a, b. 1 ♂, 1 ♀. Ok Yam, Franco-Siamese Boundary (on coast). 1–3 Jan., 1915.

"Iris yellow; bill plumbeous horny; feet dirty white." —C. B. K.

The male is somewhat richly coloured, with the stripes on the breast rather broad, but can be matched in both these respects by specimens from the Malay Peninsula.

Palæornis fasciata.

Palæornis fasciata (P. L. S. Müll.); Salvad. Cat. xx. 1891, p. 464; Gyldenstolpe, p. 60.

a, b. 2 ♂. Ok Yam, Franco-Siamese Boundary (on coast). 3 Jan., 1915.

c. 1 ♂ imm. Lem Ngop, S.E. Siam. 14 Jan., 1915.

"*Adult male.* Iris lemon; bill, upper mandible blood-red with yellow tip, lower mandible sooty black; feet olive. *Immature male.* Iris yellowish white; bill sooty, the base of the upper mandible red; feet olive.

"Common in open country dotted with trees and on the outskirts of woodland, where it flew about in noisy flocks. Also observed in the groves of Casuarinas fringing the shore."—C. B. K.

Loriculus vernalis.

Loriculus vernalis (Sparrm.); Salvad. Cat. xx. 1891, p. 517; Gyldenstolpe, p. 60.

a–d. 3 ♂, 1 ♀. Lem Ngop, S.E. Siam. 14 Jan., 1915.

"Iris white; feet orange; bill blood-red."—C. B. K.

Eurystomus orientalis orientalis.

Eurystomus orientalis (Linn.); Sharpe, Cat. xvii. 1892, p. 33; Gyldenstolpe, p. 52.

a. 1 ♂. Ok Yam, Franco-Siamese Boundary (on coast). 3 Jan., 1915.

"Iris dark; bill and foot orange-red."—C. B. K.

This specimen, with a culmen of about 28 mm. round the curve and a wing of 196, with but little suffusion of deep blue on the black of the tail and inner secondaries, appears to belong to the southern resident race *E. o. orientalis*, and not to the northern migratory form, *E. o. calonyx* Sharpe, which also occurs in the same districts.

Alcedo ispida bengalensis.

Alcedo ispida bengalensis (Gm.): Gyldenstolpe, p. 54.

Alcedo ispida (Linn.); Sharpe, Cat. xvii. 1892, p. 141.

a, b. 1 ♂, 1 ♀. Koh Klum I., S.E. Siam. 17 Dec., 1914.

c. 1 ♀ imm. Koh Mehsi, East I., S.E. Siam. 13 Dec., 1914.

"*Male.* Iris dark; bill black; feet coral-red. *Female.* Iris dark; bill sooty, gape and base of lower mandible red-brown; feet red, washed with brown."—C. B. K.

Pelargopsis gurial burmanica.

Pelargopsis burmanica Sharpe; Sharpe, Cat. xvii. 1892, p. 104; Gyldenstolpe, p. 54.

Ramphalcyon capensis burmanica Oberholser, Proc. U.S. Nat. Mus. xxxv. 1911, p. 670.

a. ♂. Klong Yai, S.E. Siam. 6 Jan., 1915

b, c. ♂ ♀. Koh Chang I., S.E. Siam. 4–6 Dec., 1914.

"Iris dark, edge of eyelids red; bill blood-red, tip and part of culmen brownish black; feet coral-red, claws horn.

"Lives in the mangroves fringing the coast and river-estuaries. A wary bird with a loud alarm-note."—C. B. K.

These specimens, none of which is very old, as is shown by the dark edgings to the feathers of the breast, appear to belong to this race, which is separated from the Malayan form by its slightly larger size and by the greenish-blue tint of the wings and back, and by the paler clay-coloured pileum slightly washed with a greenish suffusion. The colour of the under surface does not differ. Specimens from Koh Pennan, off Bandon, are intermediate between this race and *P. g. malaccensis*, but are nearer the latter.

Halcyon chloris.

Halcyon chloris (Bodd.); Sharpe, Cat. xvii. 1892, p. 273, pl. vii. fig. 3.

Halcyon chloris, subsp. *armstrongi* Sharpe, tom. cit. p. 277, pl. vii. fig. 1.

Halcyon humii Sharpe, tom. cit. p. 281, pl. viii.

a, b. 1 ♂, 1 ♀. Klong Yai, S.E. Siam. 4–6 Jan., 1915.

"Iris dark; basal two-thirds of lower mandible fleshy white; feet pale blackish purple or blackish olive."—C. B. K.

The larger the series of these blue and white Kingfishers from the Indo-Malayan region that are examined, the more it is borne in on one that no more than one species can be maintained. Of the above two specimens one is an almost typical *H. armstrongi*, while the other is typical *H. humii*.

Though the species in a wide sense covers a very large area, it must be remembered that it is with hardly any exceptions a purely coastal form which is rarely found at any distance from the sea. The whole area of distribution may therefore be regarded as practically continuous, in that no barrier of even so much as a hundred miles of sea intervenes between the most widely separated localities inhabited by the species. It is, therefore, quite illogical to divide the species into several local races, and then call in the theory of migration to explain the undoubted fact that two or more of the forms are frequently found existing side by side.

Halcyon smyrnensis fusca.

Halcyon smyrnensis fusca (Bodd.): Hartert, Nov. Zool. xvii. 1910, p. 215; Gyldenstolpe, p. 54.

Halcyon smyrnensis (Linn.); Sharpe, Cat. xvii. 1892, p. 222.

a. 1 ♀. Koh Chang I., S.E. Siam. 6 Dec., 1914.

"Iris dark; bill blood-red; feet blood-red, washed with brown."—C. B. K.

Halcyon pileata.

Halcyon pileata (Bodd.); Sharpe, Cat. xvii. 1892, p. 229; Gyldenstolpe, p. 55.

a. ♂ ad. Klong Yai, S.E. Siam. 6 Jan., 1915.

b. ♂ ad. Ok Yam, Franco-Siamese Boundary (on coast). 2 Jan., 1915.

"Iris dark; bill blood-red; feet brownish red."—C. B. K.

Carcineutes pulchellus.

Carcineutes pulchellus (Horsf.); Sharpe, Cat. xvii. 1892, p. 198.

a. 1 ♀. Klong Menao, S.E. Siam. 11 Jan., 1915.

"Iris dirty white; bill sealing-wax red; feet dull greenish yellow."—C. B. K.

This specimen is much more rufous orange above than a series of specimens from the Malay Peninsula, though it is approached in this respect by one skin from Langkawi. The irregular black markings on the breast are also more spare, and the size is very slightly larger.

The species does not appear to have been previously recorded from east of the Salwin watershed.

Dichoceros bicornis.

Dichoceros bicornis (Linn.); Ogilvie-Grant, Cat. xvii. 1892, p. 355; Gyldenstolpe, p. 55.

a, b. 2 ♂. Koh Chang I., S.E. Siam. 7–10 Dec., 1914.

c, d. 1 ♂, 1 ♀. Koh Kra I., S.E. Siam. 17 Dec., 1914.

"*Male.* Iris, inner ring silver-white, outer mottled with brown; orbital skin pale brownish yellow. Bill, upper mandible gamboge, washed with red at the tip, back end of casque blood-red; lower mandible ivory-white, tip tinged with yellow, base black. Feet olive, tarsi and soles washed with yellowish. Culmen and top of casque washed with pale red.

"*Female.* Similar to the male, but the base and front of the casque and a line on the culmen reaching half way to the tip black.

"In life the casque and bill of this Hornbill are coated with a bright yellow oil, and the neck and the white bars on the wings are stained with the same secretion which, with its colour, entirely disappears after death wherever exposed to light.

"Pairs of small flocks of this bird were frequently seen flying between the islands and the mainland—a journey involving a sea-crossing of five or six miles.

"The flesh of this species, like that of all eastern Hornbills, provides excellent food."—C. B. K.

Rhytidoceros undulatus.

Rhytidoceros undulatus (Shaw); Ogilvie-Grant, Cat. xvii. 1892, p. 382.

a. 1 ♂. Koh Kut I., S.E. Siam. 24 Dec., 1914.

b, c. 1 ♂, 1 ♀. Klong Yai, S.E. Siam. 7 Jan., 1915.

"*Male.* Iris pale hazel-red: orbital skin dull fleshy pink, Bill pale olive ivory, corrugations ivory brown, base dull red. Feet black. Gular skin Indian yellow, gular band black.

"*Female.* Iris hazel-yellow, inner ring lemon; orbital skin deep dull pink. Bill ivory, concavities of corrugations brown, base of casque brown, base of bill olive. Feet black, back of tarsi and toes grey. Gular skin turquoise and violet mottled, gular band black.

"Also observed on Koh Chang, but nowhere as common as the previous species."—C. B. K.

Anthracoceros albirostris.

Anthracoceros malabaricus (Gm.); Ogilvie-Grant, Cat. xvii. 1892, p. 366; Robinson & Kloss, Ibis, 1911, p. 35.

Anthracoceros albirostris (Shaw & Nodder); Gyldenstolpe, p. 55.

Anthracoceros fraterculus Elliot, Ann. Mag. Nat. Hist. (5) i. 1878, p. 85.

a. 1 ♀. Koh Mehsi, West I., S.E. Siam. 14 Dec., 1914.

b. 1 ♀. Klong Yai, S.E. Siam. 4 Jan., 1915.

"Iris brown; orbital skin bluish in front, pinkish white behind, cheek-skin white, post-orbital skin blue. Bill yellowish ivory and black, a patch on the sides Vandyke brown. Feet leaden.

"A noisy little Hornbill, its cries sounding like the yapping of an angry puppy. Only single individuals were met with."—C. B. K.

Both these specimens are very small, but are matched by specimens from Trang and Langkawi in the north of the Malay Peninsula.

Melittophagus swinhoii.

Melittophagus swinhoii (Hume); Sharpe, Cat. xvii. 1892, p. 56; Gyldenstolpe, p. 53.

a–c. 2 ♂, 1 ♀. Koh Chang I., S.E. Siam. 5–6 Dec., 1914.

d–f. 2 ♀, 1 ♂. Ok Yam, Franco-Siamese Boundary (on coast). 2–3 Jan., 1915.

g. 1 ♂. Klong Menao, S.E. Siam. 11 Jan., 1915.

"Iris crimson; bill black; feet leaden brown. Common in open country."—C. B. K.

Caprimulgus macrurus ambiguus.

Caprimulgus macrurus ambiguus Hartert, Ibis, 1896, p. 373; Gyldenstolpe, p. 57.

a. ♀ vix ad. Ok Yam, nr. Franco-Siamese Boundary (on coast). 1 Jan., 1915.

"Iris dark; bill fleshy, tip black; feet fleshy brown. Observed also on Koh Chang, but nowhere common." —C. B. K.

Not differing from Malay Peninsula specimens.

Lyncornis cerviniceps.

Lyncornis cerviniceps (Gould); Hartert, Cat. xvi. 1892, p. 604; Robinson & Kloss, Ibis, 1911, p. 38.

a–c. 1 ♂, 2 ♀. Klong Yai, S.E. Siam. 7 Jan., 1915.

"Iris dark; bill horny pink; feet dull blackish purple.

"Appears in this part of Siam largely to replace the smaller Caprimulgi; about Klong Yai village it was very common at dusk, but I never remember hearing it utter any kind of cry."—C. B. K.

Not hitherto recorded eastward of the Salwin watershed.

Pyrotrogon erythrocephalus.

Harpactes erythrocephalus Gould; Ogilvie-Grant, Cat. xvii. 1892, p. 488; Gyldenstolpe, p. 57.

a. 1 ♀. Klong Menao, S.E. Siam. 11 Jan., 1915.

"Iris dark; orbits and cheek-skin violet; bill cobalt; culmen, tips, and edges black; feet purplish fleshy." —C. B. K.

I can detect no differences between this single female and a series of the same sex from the hills of the Malay Peninsula. The size is apparently slightly less.

Pyrotrogon erythrocephalus klossi, subsp. nov.

A race of *P. erythrocephalus* distinguished at a glance from the typical form by the brilliance of its colouring, the red parts of the plumage lacking all tinge of crimson-lake, while the chestnut parts are clearer and less ochraceous.

Adult male (type of the subspecies). Head, throat, and upper breast "Spectrum red" (Ridgway, 'Colour Standards and Nomenclature,' Washington, 1912, pl. i.) as against "Egenia red" (pl. xiii.), the belly and under tail-coverts "scarlet red" against "Rose Dorée" (pl. 1). Mantle, back, upper tail-coverts, and middle tail-feathers decidedly lighter than in *P. erythrocephalus*.

Adult female. Differing from the typical female in the more scarlet, less pink abdomen and in the lighter tint of the upper surface, the head especially being more ochraceous and less russet.

Dimensions:—*Male*. Total length, 290; wing, 135; tail, 177; bill from gape, 27·5 mm.

Female. Total length, 295; wing, 134; tail, 177; bill from gape, 27 mm.

"*Male*. Iris reddish hazel: bill pale plumbeous, tip black; gape and orbital skin violet-blue; feet pinkish plumbeous.

"*Female*. Iris bright hazel; bill plumbeous blue, tip black; gape and orbital skin bright violet; feet bluish fleshy.

"Although Koh Chang is only three miles from the nearest part of the mainland, I was very much surprised to find a Trogon present. With its shade-haunting proclivities and weak powers of flight it is almost the last bird one expects to meet with on an island."—C. B. K.

a–c. 1 ♂, 2 ♀. Koh Chang I., S.E. Siam. 6 Dec., 1914.

There is little doubt that these specimens represent a perfectly distinct race of this widespread Trogon, which can be recognised at a glance when the fresh skins are compared with recent skins of the allied forms, though the differences in tint are difficult to express in words.

Pyrotrogon oreskios.

Harpactes oreskios Temm.; Ogilvie-Grant, Cat. xvii. 1892, p. 494; Gyldenstolpe, p. 57.

a. 1 ♂. Klong Menao, S.E. Siam. 11 Jan., 1915.

"Iris dark, edge of eyelid cobalt; bill cobalt; culmen and edge of upper mandible black; feet dull cobalt."—C. B. K.

Exactly like Malayan specimens.

Rhopodytes tristis hainanus.

Rhopodytes tristis hainanus Hartert, Nov. Zool. xvii. 1910, p. 218; Robinson & Kloss, Ibis, 1911, p. 42; Gyldenstolpe, p. 58.

a, b. 2 ♀. Koh Kut I., S.E. Siam. 29, 30 Dec., 1914.

c. ♂. Ok Yam, Franco-Siamese Boundary (on coast). 3 Jan., 1915.

d. ♂. Klong Menao, S.E. Siam. 11 Jan., 1915.

"Iris dark or brown; orbital skin deep crimson; bill dark apple-green; feet sooty or dark plumbeous, tarsi greenish slate."—C. B. K.

These specimens agree well with each other and with specimens from various parts of the Malay Peninsula southwards from Trang, and are undoubtedly to be referred to the race from Hainan described by Hartert.

Eudynamis honorata.

Eudynamis honorata (Linn.); Shelley, Cat. xix. 1891, p. 316; Gyldenstolpe, p. 58.

a, b. 1 ♂ imm., 1 ♀ imm. Koh Mak I., S.E. Siam. 20 Dec., 1914.

c. 1 ♂ ad. Koh Rang I., S.E. Siam. 21 Dec., 1914.

"Iris crimson; bill greenish horn or dull plumbeous green; feet plumbeous or greenish blue. For some reason or other a common bird on small islands."—C. B. K.

The young male is in the plumage of the adult female, while the specimen marked as female is much more black and white than the adult birds of that sex, having the nape almost uniform glossy black, with the white tips and shaft-stripes much reduced.

Thereiceryx phæostriata.

Cyanops phæostriata (Bp.); Shelley, Cat. xix. 1891, p. 76.

Cyanops faiostricta saigonensis Neumann, Bull. Brit. Orn. Club, xxiii. 1908, p. 31.

a–e. 2 ♂, 2 ♀. Ok Yam, Franco-Siamese Boundary (on coast). 2–3 Jan., 1915.

"Iris hazel; upper mandible black, the base grey, the lower mandible grey, the tip black; feet greyish olive.

"Fairly numerous in the trees dotting the common land surrounding Ok Yam village."—C. B. K.

These five specimens do not in any way bear out Prof. Neumann's diagnosis, having the wing over 112 mm. and the culmen about 28·5 mm., and I therefore do not think it advisable to split up the species. Moreover, there is no evidence to show that the Saigon and Cambodian form is not the typical race.

Mesobucco duvaugli orientalis, subsp. nov.

Allied to *M. d. cyanotis* (Blyth) from Tenasserim and the north of the Malay Peninsula, but somewhat larger in size, and paler in general coloration, the red subocular spot much intermixed with pale golden or straw-yellow.

Wing, 83–84; bill from gape, 27·0–28·5 mm.

Adult male (type of the subspecies). Collected at Ok Yam, Franco-Siamese Boundary (on coast), 1 Jan., 1915, by C. Boden Kloss.

a–e. 2 ♂, 2 ♀. Ok Yam, Franco-Siamese Boundary (on coast). 1–2 Jan., 1915.

f, g. 1 ♂, 1 ♀. Koh Chang I., S.E. Siam. 5–10 Dec., 1914.

"Iris dark; orbital skin leaden; bill black, lower mandible pale plumbeous at the base; feet yellowish olive, claws black."—C. B. K.

Gecinus vittatus.

Gecinus vittatus (Vieill.): Hargitt, Cat. xviii. 1890, p. 46.

a, b. 1 ♂, 1 ♀. Klong Menao, S.E. Siam. 8 Jan., 1915.

"Irides reddish brown or crimson; orbital skin olive; bill black or sooty, lower mandible except the tip greenish yellow; feet olive."—C. B. K.

These specimens seem a little larger, wing about 5·4 inches in the male, than any of a considerable series from the Malay Peninsula from Pulau Langkawi, south to the Lingga Archipelago. The green of the lateral stripes on the feathers of the breast and flanks is also darker and the white shaft-area of the feathers narrower. The section of the species inhabiting Indo-China seems quite cut off from that found in the Malay Peninsula, Sumatra, and Java, as the species inhabiting the north-west of the Malay Peninsula at Trang and Junk Zeylon and the north-east at Patani and Bandon is the allied but perfectly distinct *G. viridanus* (Blyth).

Gecinulus viridis.

Gecinulus viridis Blyth ; Hargitt, Cat. xviii. 1896, p. 136.

a. 1 ♀. Klong Yai, S.E. Siam. 6 Jan., 1915.

"Bill pale greyish white ; feet olive-green."—C. B. K.

This Woodpecker, which is common in Burma and Tenasserim and in many parts of the Malay Peninsula, south to Selangor, does not appear to have been recorded hitherto east of the Salwin.

Chrysocolaptes gutticristatus indo-malayicus.

Chrysocolaptes gutticristatus (Tick.) ; Hargitt, Cat. xviii. 1898, p. 47 ; Robinson & Kloss, Ibis, 1911, p. 47.

Chrysocolaptes gutticristatus indo-malayicus Hesse ; Gyldenstolpe, p. 49.

a, b. 1 ♂, 1 ♀. Koh Chang I., S.E. Siam. 11 Dec., 1914.

c. 1 ♂. Koh Klum I., S.E. Siam. 18 Dec., 1914.

d. 1 ♂. Koh Rang I., S.E. Siam. 21 Dec., 1914.

"Iris orange or orange-yellow ; bill sooty or leaden olive ; feet leaden or dark olive. The only Woodpecker met with on the islands but not observed anywhere on the mainland. Also seen on Koh Mak."—C. B. K.

Tickell's type came from somewhere in north Tenasserim about the centre of the range of the species, which extends from the Sikkim Himalayas to the south of the Malay Peninsula. As is repeatedly the case in this region, northern birds are larger and duller and southern birds smaller and brighter, and both have received names, viz., *C. sultaneus* (Gould) for birds from Assam and *C. indo-malayicus* for birds from north Malay Peninsula. The case is a curious one of interest to trinomialists. Most modern ornithologists would admit that valid subspecific differences exist between the extremes *C. sultaneus* from the north and *C. indo-malayicus* from the south-east. Owing to the fact that a median specimen has been first described, we are placed in the awkward dilemma of having to admit either one race only of three, in which latter case the range of subspecific variation in each of the subspecies from the typical form is only half of what it would have been if the type had happened to come from either extreme. So the trinomialist is forced either to become a lumper against his convictions, or to split on even finer distinctions that he usually considers sufficient.

Iyngipicus canicapillus.

Iyngipicus canicapillus (Blyth); Hargitt, Cat. xviii. 1890, p. 322; Gyldenstolpe, p. 48.

a. 1 ♂. Klong Yai, S.E. Siam. 7 Jan., 1915.

"Iris ochreous; bill horny, lower mandible grey; feet dull olive."—C. B. K.

This specimen has the four central rectrices spotted, not uniform, as is the case with many northern birds which have been separated as *I. pumilus* (Hargitt, Ibis, 1881, p. 599).

Cymborhynchus macrorhynchus.

Cymborhynchus macrorhynchus (Gm.); Hume & Davison, Stray Feath. vi. 1878, p. 92.

Eurylæmus lemniscatus Raffles, Trans. Linn. Soc. xiii. 1822, p. 296.

Cymborhynchus malaccensis Salvad. Atti R. Accad. Sci. Tor. ix. 1874, p. 425.

Cymbirhynchus macrorhynchus lemniscatus Hartert, Nov. Zool. ix. 1902, p. 206.

a, b. ♂ ♀. Klong Yai, S.E. Siam. 7 Jan., 1915.

"Iris emerald; bill turquoise-blue, tinged green on the culmen and tomia, lower mandible deep yellow edged with turquoise; feet cobalt."—C. B. K.

Excluding the Aracan subspecies *C. m. affinis* Blyth, which in its smaller size and red-tipped tertials stands apart from the other forms, many authorities have divided the Rouge-et-Noir Broadbills inhabiting the Indo-Malayan region into two races, basing their distinction on the amount of white on the tail-feathers.

The typical race, founded on Latham's Great Billed Tody is supposed to have little or no white in the tail and to be confined to Borneo, while the form inhabiting Sumatra and the Malay Peninsula north to Tenasserim and Siam has the outer webs of the three outer tail-feathers with white on the inner webs. For this race the earliest name available is *E. lemniscatus* Raffles, founded on specimens from "the interior of Sumatra," probably inland from Bencoolen.

Hume (*loc. cit.*) has pointed out that in regard to continental specimens, these differences are not constant, there being great variation in the amount of white on the tail in the series examined by him. Four specimens from the west coast of Sumatra, which are practically topotypes of *E. lemniscatus,* have in two cases practically no white on the tail, while in the other two it is much less than in most Malayan specimens, though these can be matched by a specimen from Parit, central Perak. Most Bornean specimens have traces of white, though in the majority the white is small in extent, often little more than a pale patch, and does not extend to more than two pairs of feathers.

On the face of the evidence before us we should be forced to regard the typical race *C. m. macrorhynchus* as occurring in both Borneo and western Sumatra, while the continental form, to which the name *C. m. malaccensis* Salvad. would have to be applied, would inhabit the mainland and east and south Sumatra. Possibly this is really the case, as west Sumatra, west of the main range, is much older land than the east and south of the island, in which districts the fauna is almost purely Malaccan with no distinctive species. The more obvious course is to regard the differential characters as so unstable and plastic as not to justify separation of the species into geographical races on their account.

The above Siamese specimens, which are both young, have the white spots on the tail distinctly tinged with ochreous, which is apparently not due to stain.

Pitta cyanea.

Pitta cyanea Blyth; Sclater, Cat. xiv. 1888, p. 417.

a. 1 ♂. Klong Menao, S.E. Siam. 12 Jan., 1915.

"Iris dark; bill black; feet lilac fleshy."—C. B. K.

Not hitherto recorded east of the Salwin River.

Anthocincla phayrii.

Anthocincla phayrii Blyth; Bingham, Stray Feath. ix. 1880, pp. 177, 494; Sclater, Cat. xiv. 1888, p. 413.

a. 1 ♂. Ok Yam, Franco-Siamese Boundary (on coast). 3 Jan., 1915.

b–f. 4 ♂, 1 ♀. Klong Menao, S.E. Siam. 10–12 Jan., 1915.

"Iris dark; bill black; feet fleshy, tarsi washed with brown."—C. B. K.

The female differs from the male in having the mesial streak on the head and the two lateral streaks from behind the ear-coverts dull brown, not glossy jet-black.

This species again has not hitherto been recorded from east of the Salwin.

Hirundo rustica gutturalis.

Hirundo rustica gutturalis Scop.; Sharpe, Cat. x. 1885, p. 134.

Chelidon rustica gutturalis Gyldenstolpe, p. 41.

a. 1. Ok Yam, Franco-Siamese Boundary (on coast). 3 Jan., 1915.

"Iris dark; bill and feet black."—C. B. K.

Alseonax latirostris.

Alseonax latirostris (Raffles); Sharpe, Cat. iv. 1879, p. 127; Oates, Faun. Brit. Ind., Birds, ii. 1890, p. 35.

a, b. 1 ♂, 1 ♀. Koh Chang I., S.E. Siam. 10 Dec., 1914.

c. 1 ♀. Klong Menao, S.E. Siam. 9 Jan., 1915.

"Iris dark; bill black, base of the lower mandible dull yellowish; feet black."—C. B. K.

A winter visitor to almost all parts of the Indo-Malayan and Indo-Chinese regions.

Muscitrea grisola.

Pachycephala grisola (Blyth); Gadow, Cat. viii. 1881, p. 220.

Muscitrea grisola Oates, Faun. Brit. Ind., Birds, ii. 1890, p. 30; Robinson & Kloss, Ibis, 1911, p. 54; Robinson, Journ. Fed. Malay States Mus. v. 1915, p. 148.

a. 1 ♂. Koh Klum I., S.E. Siam. 18 Dec., 1914.

b. 1 ♀. Koh Rang I., S.E. Siam. 21 Dec., 1914.

"Iris dark; upper mandible sooty, lower horny; feet dull plumbeous."—C. B. K.

Widely distributed in the coastal zone of the Indo-Malayan and Indo-Chinese regions but rarely, if ever, found at any distance from the fringing mangrove belt.

Cyornis banyumas tickelliæ.

Siphia tickelliæ Blyth; Sharpe, Cat. iv. 1879, p. 447.

Cyornis tickelli Gyldenstolpe, p. 37.

a. 1 ♂. Koh Klum I., S.E. Siam. 18 Dec., 1914.

b, c. 1 ♂, 1 ♀. Koh Rang I., S.E. Siam. 21 Dec., 1914.

"Iris dark; bill black; feet bluish pink, plumbeous brown, or dull lilac."—C. B. K.

These specimens have the wing about 73 mm., considerably larger than Gyldenstolpe's specimens, which are possibly referable to some other form.

C. sumatrensis, from the Malay Peninsula, which is smaller again, with a pure white belly and under tail-coverts, is only a subspecies of this species, with which it evidently intergrades.

Cyornis pallidipes hainana.

Siphia hainana Ogilvie-Grant, P. Z. S. 1900, p. 480.

Siphia pallidipes hainana Hartert, Nov. Zool. xvii. 1910, p. 225.

a. 1 ♂. Klong Menao, S.E. Siam. 12 Jan., 1915.

"Iris dark; bill black; feet pinkish blue."—C. B. K.

This specimen evidently belongs to the form described from Hainan. It has the wing 70·5 and the tail 61 mm. and is not quite adult, though practically so.

Hypothymis azurea cæruleocephala.

Hypothymis azurea prophata Oberholser; Gyldenstolpe, p. 37.

a–e. 3♂, 2♀. Koh Chang I., S.E. Siam. 5–8 Dec., 1914. Wing, ♂ 71–73; ♀ 71–72 mm.

f–k. 4♂, 2♀. Koh Kut I., S.E. Siam. 24–29 Dec., 1914. Wing, ♂ 72–74; ♀ 71·5–73 mm.

l, m. 1♂, 1♀. Klong Menao, S.E. Siam. 10 Jan., 1915. Wing, ♂ 72; ♀ 71 mm.

"Iris dark; orbital skin cobalt; bill cobalt; feet slaty blue."—C. B. K.

Oberholser, *more americano*, has divided the species generally known as *H. azurea* into a multitude of races on which, in the absence of his specimens, it is impossible to express an opinion in the majority of cases. It may be noted, however, that his material, though collectively very considerable, does not often comprise large series from the separate areas and that many of his races are founded on very limited numbers of specimens. Distinctions founded on dimensions are apt to break down when large series are accumulated.

Other features relied on, such as the extent of the black on the crown and the size of the black neck-gorget, are much affected by the "make" of the skin, while the tint of blue on the upper and lower surface is very largely influenced by the age of the plumage, as is shown by the very large series of Malayan specimens available in the F.M.S. Museums.

Dealing with the present series, I have referred them to *H. a. cæruleocephala* on account of the purer white tint of the flanks and centre of the abdomen, which are more tinged with bluish grey in Malayan specimens of *A. a. prophata* Oberholser. The series from the different islands differ slightly *inter se*, those from Koh Kut having a more distinct black gorget in the male, while the throats of the females are brighter blue than in those from the mainland or from Koh Chang.

I do not, however, care to add other names to the already sufficiently extensive list of subspecies.

Terpsiphone affinis.

Terpsiphone affinis Blyth ; Sharpe, Cat. iv. 1879, p. 349 ; Robinson & Kloss, Ibis, 1911, p. 53 ; Robinson, Journ. Fed. Malay States Mus. v. 1915, pp. 99, 148.

a. 1 ♂ ad. Koh Chang I., S.E. Siam. 11 Dec., 1914.

b. 1 ♀ imm. Klong Menao, S.E. Siam. 9 Jan., 1915.

"*Adult male.* Iris dark ; eyelids, bill, and feet plumbeous blue. *Immature female.* Iris dark ; bill pale lilac blue, tip black, lower mandible yellow tinged with lilac ; feet slaty blue."—C. B. K.

Chloropsis chlorocephala.

Chloropsis chlorocephala (Wald.) ; Sharpe, Cat. vi. 1881, p. 28 ; Robinson & Kloss, Ibis, 1911, p. 55 ; Gyldenstolpe, p. 23.

a. 1 ♀. Klong Menao, S.E. Siam. 12 Jan., 1915.

"Iris dark ; bill black, base of lower mandible plumbeous; feet pale plumbeous."—C. B. K.

Irena puella puella.

Irena puella (Lath.) ; Sharpe, Cat. vi. 1881, p. 177 ; Gyldenstolpe, p. 23.

a–c. 3 ♂. Koh Chang I., S.E. Siam. 5–11 Dec., 1914.

d–f. 3 ♂. Koh Kut I., S.E. Siam. 23–30 Dec., 1914.

g, *h*. 1 ♂, 1 ♀. Koh Mehsi, East I., S.E. Siam. 13 Dec., 1914.

i. 1 ♀. Koh Klum I., S.E. Siam. 18 Dec., 1914.

j–l. 1 ♂, 1 ♂ imm., 1 ♀. Ok Yam, Franco-Siamese Boundary (on coast). 2 Jan., 1915.

m. 1 ♂. Klong Menao, S.E. Siam. 11 Jan., 1915.

"*Male.* Iris crimson or carmine ; bill and feet black. *Female.* Iris hazel or brown; bill and feet black."—C. B. K.

All this series shows very distinctively the characters of the northern race of the species, having both upper and under tail-coverts falling short of the tip of the tail by considerably more than the length of the tarsus. Young males which have not yet assumed the adult dress can apparently be distinguished from the females by their deeper, less greenish tint with a decided gloss on the edges of the upper tail-coverts.

Criniger ochraceus.

Criniger ochraceus Moore, Cat. B. E. I. Comp. Mus. 1854, p. 252; Hartert, Nov. Zool. ix. 1902, p. 559.

Criniger gutturalis (part.) Sharpe, Cat. vi. 1881, p. 80.

Criniger sordidus Richmond, Proc. U.S. Nat. Mus. xxii. 1900, p. 320; Robinson & Kloss, Ibis, 1911, p. 57.

a–d. 3 ♂, 1 ♀. Koh Chang I., S.E. Siam. 5–6 Dec., 1914.

e, f. 2 ♂. Koh Kut I., S.E. Siam. 27–30 Dec., 1914.

g. 1 ♂. Klong Yai, S.E. Siam. 6 Jan., 1915.

h. 1 ♂. Klong Menao, S.E. Siam. 11 Jan., 1915.

"Iris ochreous, hazel or dark brown; upper mandible dark plumbeous, horny or sooty, lower mandible plumbeous or plumbeous blue; feet brownish fleshy, soles yellow." —C. B. K.

Both Mr. Richmond in describing and Mr. Kloss and myself in admitting *C. sordidus* failed to recognise the fact that the type of *C. ochraceus* was obtained by Helfer in Tenasserim, probably in the central or southern districts, and that consequently, if any difference exists between the northern race and the southern Peninsular form, it is the latter that will have to receive a name. On comparing the present series of eight skins and others from Trang, Perlis, and Bandon, including one of the typical specimens of *C. sordidus*, with a large series from the Federated Malay States, I find that the only differences to be noted are a slightly richer tint of yellowish ochraceous brown on the lower tail-coverts in the northern specimens, and a more pronounced white throat, more clearly defined from the rest of the under parts, in the southern specimens. In the latter also the sides of the breast are more ashy grey. The race is perhaps sufficiently distinct to merit separation, and it may, therefore, be designated as:

Criniger ochraceus sacculatus, subsp. nov.

Range. Southwards from the north of Perak to the south of the Malay Peninsula, generally at considerable elevations, especially in the south of its range.

Type. Adult female. F.M.S. Museum, No. 1172/08. Collected at Genting Bidai, Selangor, 2300 ft., 14 May, 1908.

Pycnonotus finlaysoni.

Pycnonotus finlaysoni (Strickl.); Sharpe, Cat. vi. 1881, p. 144; Gyldenstolpe, p. 26.

a. 1 ♂. Klong Yai, S.E. Siam. 2 Jan., 1915.

b. 1 ♀. Ok Yam, Franco-Siamese Boundary (on coast). 2 Jan., 1915.

"Iris dark; bill black; feet sooty. A bird of the open country."—C. B. K.

Otocompsa flaviventris.

Otocompsa flaviventris (Tick.); Sharpe, Cat. vi. 1881, p. 161; Gyldenstolpe, p. 25.

a–e. 4 ♂, 1 ♀. Koh Chang I., S.E. Siam. 5–6 Dec., 1914.

f–j. 4 ♂, 1 ♀. Koh Kut I., S.E. Siam. 20–29 Dec., 1914.

k. 1 ♀. Ok Yam, Franco-Siamese Boundary (on coast). 2 Jan., 1915.

"Iris pale lemon; bill black; feet dark brown.

"The commonest Bulbul in south-east Siam and the islands. Where only forest existed it inhabited the tops of the higher trees, but wherever clearings and scrub occurred it deserted the forest for them."—C. B. K.

Garrulax diardi.

Garrulax diardi (Less.); Sharpe, Cat. vii. 1883, p. 437; Gyldenstolpe, p. 20.

a–d. 2 ♂, 2 ♀. Lem Ngop, S.E. Siam. 15 Jan., 1915.

"Iris crimson or brown; bill black; feet dark-brown.

"Occurring in open country, where it was common in clumps of trees among cultivation."—C. B. K.

Pomatorhinus nuchalis.

Pomatorhinus nuchalis Tweedd.; Sharpe, Cat. vii. 1883, p. 411; Harington, Journ. Nat. Hist. Soc. Bombay, xxiii. 1914, p. 332.

a, b. 1 ♂, 1 ♀. Klong Yai, S.E. Siam. 6 Jan., 1915.

c. 1 ? Klong Menao, S.E. Siam. 11 Jan., 1915.

" Iris ochreous or pinkish yellow; bill ivory-white; culmen and nostril sooty; feet leaden, soles dull yellow." —C. B. K.

As far as can be judged without direct comparison, these specimens are quite typical examples of *P. nuchalis,* for which these localities form a very considerable extension of range. The species found in south-western Siam, in Bandon and Trang, is *P. olivaceus* Blyth, which differs in having the chestnut on the sides confined to a patch on the sides of the neck.

Pellorneum subochraceum.

Pellorneum subochraceum Swinh.; Sharpe, Cat. vii. 1883, p. 521; Robinson & Kloss, Ibis, 1911, p. 59; Gyldenstolpe, p. 21; Robinson, Journ. Fed. Malay States Mus. v. 1915, pp. 103, 149.

a. 1 ♀. Koh Chang I., S.E. Siam. 5 Dec., 1914.

" Iris dark; orbital skin greenish yellow; upper mandible sooty, lower mandible with the base yellowish, the tip pale plumbeous; feet fleshy yellow."—C. B. K.

Somewhat darker, with the stripes on the breast rather broader than in the majority of specimens from the Malay Peninsula; the differences, however, are not constant.

Setaria rufifrons.

Malacopteron rufifrons Cab. Mus. Hein. i. 1850, p. 65.

Malacopterum lepidocephalum (Gray); Sharpe, Cat. vii. 1883, p. 567.

a–c. 2 ♂, 1 ♀. Klong Menao, S.E. Siam. 10 Jan., 1915.

" Iris brown; bill blackish, the lower mandible grey; feet pinkish grey."—C. B. K.

The occurrence of this species in Siam adds another to the group of vertebrates which are found in Siam, Java, and occasionally Sumatra but which do not occur in the Malay Peninsula. Though I have not been able to compare the above three birds with specimens from Java or Sumatra, they conform exactly with the descriptions and agree also in dimensions.

Turdinus abbotti.

Turdinus abbotti (Blyth); Sharpe, Cat. vii. 1883, p. 541; Ogilvie-Grant, Journ. Fed. Malay States Mus. iii. 1908, p. 29.

Turdinus abbotti olivaceum (Strickl.); Hartert, Nov. Zool. ix. 1902, p. 562.

a–k. 4 ♂, 7 ♀. Koh Kut I., S.E. Siam. 24–29 Dec., 1914.

l, m. 1 ♂, 1 ♀. Klong Menao, S.E. Siam. 9–11 Jan., 1915.

"Iris ochreous; bill horny black, lower mandible pale grey; feet fleshy.

"Extremely common on Koh Kut, skulking about in the undergrowth of the forest."—C. B. K.

This considerable series is very uniform, and when compared with a series of over thirty specimens from various parts of the Malay Peninsula may be said to differ on an average in having the flanks and under tail-coverts a richer ochraceous rufous, as is noted for northern specimens by Hartert (*loc. cit.*). A word of warning from the field-ornithologists to those whose only experience is with cabinet specimens is perhaps necessary in this respect. Many species of Timeliine birds with rufous or brown, or greyish brown, in the plumage, change tint with unexampled rapidity when converted into skins, greys and browns becoming less greyish and more snuffy brown, while rufous browns fade rapidly.

These skins from Siam, when laid out with the available material from more southern localities in the Malay Peninsula, are noticeably brighter and richer in tint and are so noted at the present moment. I have very little doubt, however, that, if in the course of the next two years or so a large series from the vicinity of Kuala Lumpur was brought in and compared with the present series, I myself, or the average observer, would note that there was no recordable difference between the two groups, or that, if anything, the southern group was the brighter. It is also a significant fact that, when a recently collected series of birds is worked out, the average differences noted are nearly always in the direction of brighter tints in the more recently collected birds. More importance, therefore, than is commonly the case should be accorded to this factor, the importance of which is by no means realized by home workers, who, moreover, rarely deal with the bulk of material that is often available to local students.

Myiophoneus eugenii.

Myiophoneus eugenii Hume; Sharpe, Cat. vii. 1883, p. 9.

a. 1 ♂. Koh Chang I., S.E. Siam. 7 Dec., 1914.

"Iris dark; bill gamboge-yellow; culmen and nostrils sooty; feet black."—C. B. K.

Quite typical of this species, without any pale markings on the wing-coverts. Wing, 163; tail, 128; tarsus, 53; bill from gape, 43 mm.

Myiophoneus klossii, sp. nov.

Related to *M. eugenii*, but smaller, and having the lores and a patch on the throat pure white.

Adult male. General colour dark blue with a slight purplish cast as in other species of the genus; feathers of the upper surface with paler glistening tips. Lores, feathers in front of the eye, and a narrow periocular ring white, the feathers with ill-defined black tips. Beneath dark blue, the feathers with lilac-blue glistening tips, lightest and most pronounced on the upper breast, more bluish on the belly. A large silky white patch in the centre of the lower throat. All the feathers of the lower surface with pure white bases most extensive on the flanks. Angle of the wing lighter ultramarine blue, all the feathers with strongly marked lilac-blue glistening tips, the median and greater wing-coverts without light tips. Outer median under wing-coverts largely white. Total length, 268; wing, 152; tail, 118; tarsus, 47; bill from gape, 39 mm.

"Iris dark brown; bill dull yellow; nostrils and culmen sooty; feet black."—C. B. K.

Type. Adult male, collected on Koh Mehsi, West I., S.E. Siam on 14 Dec., 1914 by C. Boden Kloss.

At first sight one might be inclined to regard this bird as a partially albinistic specimen of *M. eugenii*. That this is not the case is shown by the light colouring of the angle of the wing, by the smaller dimensions, and by the symmetry of the white markings. From *M. crassirostris* of Trang and Langkawi it is separable by the much slenderer bill and by the much darker ground colouring, and from *M. temmincki* by the absence of pale spots on the median under wing-coverts.

Mixornis gularis rubricapilla.

Mixornis rubricapilla (Tick.); Sharpe, Cat. vii. 1883, p. 578; Gyldenstolpe, p. 21.

a–c. 1 ♂, 2 ♀. Koh Chang I., S.E. Siam. 5 Dec., 1914.

d. 1 ♂. Koh Rang I., S.E. Siam. 21 Dec., 1914.

e. 1 ♂. Koh Kut I., S.E. Siam. 25 Dec., 1914.

f. 1 ♂. Klong Menao, S.E. Siam. 12 Jan., 1915.

"Iris white tinged with brown, yellow-ochre, yellow, or ochreous; upper mandible black, sooty or leaden, lower mandible plumbeous; feet yellowish olive."—C. B. K.

As Hume has already observed, there is a perfect gradation between the Sumatran and Malayan *M. gularis,* with heavily striped throat, rich chestnut head, and the back and external aspect of the wings brown, and the Himalayan and Burmese *M. rubricapilla* with the streaks on the throat reduced to shaft-stripes, the chestnut on the head much paler, and the back and external aspect of the wing greenish olive. As noted elsewhere, the meeting place of the two forms is the southern provinces of Siam in the Malay Peninsula, specimens from Bandon and the adjacent islands being exactly intermediate.

The present series are typical *M. g. rubricapilla.*

Zoothera marginata.

Geocichla marginata Seebohm, Cat. v. 1881, p. 162; Oates, Faun. Brit. Ind., Birds, ii. 1890, p. 157.

a, b. 1 ♂, 1 ♀. Klong Yai, S.E. Siam. 7 Jan., 1915.

"Iris dark; bill black, lower mandible horny; feet brown."—C. B. K.

Monticola gularis.

Monticola gularis (Swinh.); Seebohm, Cat. v. 1881, p. 326; Hartert, Vög. pal. Faun. i. 1910, p. 673.

a. 1 ♀ imm. Klong Menao, S.E. Siam. 11 Jan., 1915.

"Iris dark; bill brown, base of lower mandible fleshy; feet deep fleshy."—C. B. K.

This extremely rare Rock-Thrush, which breeds in northern and eastern Siberia and northern China, appears to winter in Indo-China, and is occasionally, though rarely, met with in the Malay Peninsula. The present specimen is quite immature and has the upper surface earthy-brown with no tinge of bluish-grey, but is undoubtedly referable to this species.

The dimensions are: wing, 94; tail, 69; tarsus, 24 mm.

Monticola solitarius philippensis.

Monticola cyanus solitaria Seebohm, Cat. v. 1881, p. 318.

Monticola solitarius philippensis Hartert, Vög. pal. Faun. i. 1910, p. 675; Gyldenstolpe, p. 40.

a. 1 ♂. Koh Klum I., S.E. Siam. 17 Dec., 1914.

b. 1 ♀. Koh Kra I., S.E. Siam. 17 Dec., 1914.

c. 1 ♂. Lem Ngop, S.E. Siam. 15 Jan., 1915.

"Iris dark; bill leaden black or black; feet black or sooty. The two island specimens came from the rocks of the shore, that from Lem Ngop was shot on the top of the white-painted wooden lighthouse, where it had a regular perching spot."—C. B. K.

Birds from the Malay Peninsula or Indo-China are very variable, some specimens having no chestnut whatever in the pelage, while in others almost the entire abdomen, axillaries, and under wing- and tail-coverts are chestnut-red. Probably both the western form *M. solitarius solitarius* and the eastern *M. s. philippensis* winter in the region. Nearly all the birds met with are more or less immature.

Geocichla innotata.

Geocichla innotata Blyth; Seebohm, Cat. v. p. 176; Robinson & Kloss, Ibis, 1911, p. 63.

a–e. 4 ♂, 1 ♀. Koh Kut I., S.E. Siam. 23–30 Dec., 1914.

"Iris dark; upper mandible black, lower, tip black, base plumbeous; feet fleshy yellow."—C. B. K.

This species does not appear to have been recorded from Siam or the more eastern countries of Indo-China. The present series is perfectly typical and shows no traces of the white wing-bar which distinguishes *G. citrina* from the present bird.

At Trang in western Siam both species occurred during the winter months, but *G. citrina* was in the large majority.

Turdus obscurus.

Merula obscura (Gm.); Seebohm, Cat. v. 1881, p. 273.

Turdus obscurus Hartert, Vög. pal. Faun. i. 1910, p. 656.

a. 1 ♂ imm. Ok Yam, Franco-Siamese Boundary (on coast). 2 Jan., 1915.

"Iris dark; upper mandible brown, lower yellow, the tip brown; feet brownish yellow."—C. B. K.

A winter visitor to Indo-China and the Malay Peninsula, apparently only on passage in the latter country.

Kittacincla macrurus macrurus.

Turdus macrurus Gm. Syst. Nat. i. 1789, p. 820.

Cittocincla tricolor (Vieill.); Sharpe, Cat. v. 1881, p. 85 (part.).

Kittacincla macrurus macrurus Hartert, Nov. Zool. ix. 1902, p. 572.

Cittocincla macrura Gyldenstolpe, p. 39.

a.	1 ♂.	Koh Chang I., S.E. Siam.	9 Dec., 1914.
b.	1 ♂.	Koh Klum I., S.E. Siam.	17 Dec., 1914.
c.	1 ♂.	Koh Kut I., S.E. Siam.	17 Dec., 1914.
d.	1 ♂.	Koh Kra I., S.E. Siam.	17 Dec., 1914.
e.	♂.	Klong Menao, S.E. Siam.	12 Jan., 1915.

"Iris dark; bill black; feet fleshy."—C. B. K.

The type of this race came from Pulau Condor. The present specimens are practically identical with birds from the Malay Peninsula, but the chestnut of the lower surface is very slightly paler.

Copsychus saularis musicus.

Lanius musicus Raffles, Trans. Linn. Soc. xiii. 1821, p. 307.

Copsychus saularis (Linn.); Sharpe, Cat. vii. 1883, p. 61; Hartert, Nov. Zool. xvii. 1910, p. 234; Gyldenstolpe, p. 39.

a. 1 ♂. Klong Menao, S.E. Siam. Jan., 1915.

Gyldenstolpe states that his specimens of the Dial Bird from north and central Siam all belong to the Indian form *C. saularis saularis* (Linn.), in which the under wing-coverts and axillaries are almost entirely white.

Mr. Kloss' example, however, agrees perfectly with skins from the Malay Peninsula and Sumatra in having the under wing-coverts and axillaries largely black, thus agreeing with *C. s. musicus*, which was originally described from Sumatra.

Acrocephalus bistrigiceps.

Acrocephalus bistrigiceps Swinh.; Seebohm, Cat. v. 1881, p. 94; Hartert, Vög. pal. Faun. i. 1909, p. 565; Robinson, Journ. Fed. Malay States Mus. v. 1915, p. 150.

a. 1 ♂. Klong Yai, S.E. Siam. 7 Jan., 1915.

"Iris dark; bill sooty brown, lower mandible dull yellow; feet brownish olive."—C. B. K.

Not hitherto recorded from Siam proper, though it is known from Tenasserim and the northern Malay Peninsula.

Phylloscopus borealis borealis.

Phylloscopus borealis (Blas.); Seebohm, Cat. v. 1887, p. 40; Robinson & Kloss, Ibis, 1911, p. 65; Robinson, Journ. Fed. Malay States Mus. v. 1915, p. 150.

Phylloscopus borealis borealis Hartert, Vög. pal. Faun. i. 1909, p. 517.

a, b. 1 ♂, 1 ♀. Koh Kut I., S.E. Siam. Dec., 1914.

"Iris dark; bill, upper mandible brown, lower yellow; feet brownish yellow."—C. B. K.

Specimens in fairly fresh plumage, with the pale wing-bars well marked.

This race and the more eastern form *P. b. xanthodryas* Swinh. overlap in their winter quarters in Borneo, but, with one exception obtained on Koh Pennan on May 15th, 1913, all of a large series from the Malay Peninsula seem to be referable to *P. b. borealis.* The above specimen has a wing of about 73 mm., which is larger than any other specimen before us.

Phylloscopus superciliosus superciliosus.

Phylloscopus superciliosus (Gm.); Seebohm, Cat. v. 1881, p. 68; Gyldenstolpe, p. 29; Robinson & Kloss, Ibis, 1911, p. 66.

Phylloscopus superciliosa superciliosa Hartert, Vög. pal. Faun. i. 1909, p. 518; id. Nov. Zool. xvii. 1910, p. 239.

a. 1. Ok Yam, Franco-Siamese Boundary, (on coast). 3 Jan., 1915.

b. 1. Klong Menao, S.E. Siam. 10 Jan., 1915.

"Iris dark; bill brown, lower mandible yellow; tarsi brown, toes yellow."—C. B. K.

Phylloscopus tenellipes.

Phylloscopus tenellipes Swinh.; Seebohm, Cat. v. 1881, p. 46; Hartert, Vög. pal. Faun. i. 1909, p. 512; id. Nov. Zool. xvii. 1910, p. 241; Robinson & Kloss, Ibis, 1911, p. 65.

a. 1 ♂. Koh Chang I., S.E. Siam. 10 Dec., 1914.

b. 1 ♂. Koh Kut I., S.E. Siam. 30 Dec., 1914.

"Iris dark; bill, upper mandible horny, lower pale fleshy; feet fleshy."—C. B. K.

This species does not appear to have been hitherto recorded from Siam, though it is known to winter in Tenasserim, the north of the Malay Peninsula, and in Hainan.

Dicæum cruentatum.

Dicæum cruentatum (Linn.); Sharpe, Cat. x. 1885, p. 15; Gyldenstolpe, p. 46.

a–c. 3 ♂. Koh Chang I., S.E. Siam. 6–11 Dec., 1914.

d. 1 ♂. Koh Rang I., S.E. Siam. 21 Dec., 1914.

e. 1 ♂. Koh Kut I., S.E. Siam. 30 Dec., 1914.

f. 1 ♂ imm. Ok Yam, Franco-Siamese Boundary (on coast). 6 Jan., 1915.

"Iris dark; bill and feet black."—C. B. K.

The male from Koh Kut has the middle of the upper breast flecked with scarlet.

Hartert (Nov. Zool. xvii. 1910, pp. 244–5) recognises three races of this Flower-pecker, viz., *Dicæum cruentatum* (Linn.) from "India," with the upper wing-coverts "glossy steel-blue" and a slender bill; *D. c. ignitum* (Begbie) from the Malay Peninsula, with the wing-coverts purplish blue; and *D. c. coccineum* (Scop.) from south China and Hainan, with the wing-coverts steel-blue rather more greenish than purplish," with a larger bill and longer wings than the Indian form. I am unable to recognise any constant differences in the above series and in specimens from the Malay Peninsula, which in some instances have the wing-coverts with a very distinct greenish cast. The Siamese specimens have the wing very slightly longer.

Dicæum chrysorrhœum.

Dicæum chrysorrhœum Temm.; Sharpe, Cat. x. 1885, p. 44.

a. 1 ♂. Ok Yam, Franco-Siamese Boundary (on coast). 2 Jan., 1915.

"Iris orange; upper mandible black, lower plumbeous; feet slaty black. Associated with the following species in the trees dotting the common land about Ok Yam village."—C. B. K.

Apparently slightly larger and a little more yellowish above than Malayan specimens, of which, however, not many are available.

Piprisoma modestum modestum.

Prionochilus modestus (Hume); Sharpe, Cat. x. 1885, p. 32.

Piprisoma modestum Oates, Faun. Brit. Ind., Birds, ii. 1890, p. 383; Robinson & Kloss, Ibis, 1911, p. 79.

a–d. 4 ♀. Ok Yam, Franco-Siamese Boundary (on coast). 2 Jan., 1915.

"Iris ochreous; upper mandible sooty, lower plumbeous; feet slaty black."—C. B. K.

These specimens agree with the typical race from Tenasserim and the north of the Malay Peninsula, and not with the darker and duller form, *Piprisoma m. remotum* from Negri Sembilan, recently described by us (Journ. Federated Malay States Mus. vi. 1915, p. 29).

Æthopyga siparaja cara.

Æthopyga cara Hume, Stray Feath. ii. 1874, p. 473 (note); Gyldenstolpe, p. 42; Robinson, Journ. Fed. Malay States Mus. v. 1915, p. 151.

Æthopyga siparaja (Raffles); Robinson & Kloss, Ibis, 1911, p. 74 (part.).

a. 1 ♂. Koh Chang I., S.E. Siam. Dec., 1914.

b. 1 ♂. Koh Kut I., S.E. Siam. 30 Dec., 1914.

"Iris dark; upper mandible dark brown, lower pale brown; feet brownish black."—C. B. K.

These specimens, as might be expected, are quite typical *Æ. s. cara*, and agree well with others from the islands in the Bight of Bandon.

Anthothreptes malaccensis.

Anthothreptes malaccensis (Scop.); Gadow, Cat. ix. 1884, p. 122; Robinson & Kloss, Ibis, 1911, p. 76; Robinson, Journ. Fed. Malay States Mus. v. 1915, p. 152.

a. 1 ♂. Koh Kut I., S.E. Siam. 29 Dec., 1914.

b. 1 ♂. Klong Menao, S.E. Siam. Jan., 1915.

"Iris ochraceous brown; bill blackish; feet dark olive-brown."—C. B. K.

Leptocoma hasselti.

Cinnyris hasselti (Temm.); Gadow, Cat. ix. 1884, p. 67.

a. 1 ♂. Koh Mehsi, East I., S.E. Siam. 13 Dec., 1914.

b. 1 ♂. Koh Kut I., S.E. Siam. 25 Dec., 1914.

c, d. 2 ♂. Klong Menao, S.E. Siam. 12 Jan., 1915.

e. 1 ♂. Ok Yam, Franco-Siamese Boundary (on coast). 3 Jan., 1915.

"Iris dark; bill and feet black."—C. B. K.

Graculipica nigricollis.

Graculipica nigricollis (Payk.); Sharpe, Cat. xiii. 1890, p. 77; Gyldenstolpe, p. 35.

a–c. 1 ♂, 2 ♀. Lem Ngop, S.E. Siam. 14 Jan., 1915.

"Iris whitish; orbital skin lemon; bill black; feet dirty white with a bluish tinge. Going about in flocks in fairly open country."—C. B. K.

Æthiopsar grandis.

Acridotheres grandis (Moore): Sharpe, Cat. xiii. 1890, p. 91.

Æthiopsar grandis Gyldenstolpe, p. 36.

a–d. 2 ♂, 2 ♀. Lem Ngop, S.E. Siam. 13–14 Jan., 1914.

"Iris brown; bill and feet yellow. Seen in flocks in cultivated land."—C. B. K.

Gracula javana intermedia.

Eulabes intermedius (A. Hay); Robinson & Kloss, Ibis, 1911, p. 67; Gyldenstolpe, p. 34.

Gracula intermedius hainanus (Swinh.); Hartert, Nov. Zool. xvii. 1910, p. 251.

Gracula javana intermedia Stresemann, Nov. Zool. xix. 1912, p. 314.

a–e. 3 ♂, 2 ♀. Ok Yam, Franco-Siamese Boundary (on coast). 1–2 Jan., 1915.

f. 1 ♂. Klong Menao, S.E. Siam. Jan., 1915.

"Iris dark; gular skin pale orange, lappets yellow; bill orange-red, tip yellow; feet yellow, lemon or Indian yellow."—C. B. K.

These specimens are rather smaller than others from Tenasserim and the Siamese States in the Malay Peninsula, and have a rather smaller and lighter bill with narrower lappets, but the differences are not very marked or very constant. The rounded or sharp-pointed end of the bare skin running up from the lappets towards the eye, noted by Hartert, is a very variable character, evidently of no importance.

Oriolus indicus.

Oriolus indicus Jerdon: Hartert, Nov. Zool. xvii. 1910, p. 249.

Oriolus diffusus Sharpe, Cat. iii. 1877, p. 197.

a–c. 2 ♂ ad., 1 ♀ imm. Koh Kut I., S.E. Siam. 29–30 Dec., 1914.

d–g. 1 ♂, 3 ♀. Koh Chang I., S.E. Siam. 5–9 Dec., 1914.

h. 1 ♂ ad. Koh Rang I., S.E. Siam. 21 Dec., 1914.

i, j. 1 ♀ ad., 1 ♀ imm. Ok Yam, Franco-Siamese Boundary (on coast). 2 Jan., 1915.

"*Adult.* Inner ring of iris dull crimson, outer greyish; bill deep fleshy; feet plumbeous. *Immature.* Iris dark; bill fleshy brown; feet plumbeous blue.

"A common bird in fairly open country and occurring less frequently in forest. It has a harsh and very raucous note, and one of its calls we often mistook for that of a small Hawk."—C. B. K.

Gyldenstolpe did not meet with this species, though he records *O. melanocephalus*, which is not represented in Kloss' collection, as very common over the whole of Siam. Both species are met with in the vicinity of Bangkok (*vide* Williamson, Journn. Nat. Hist. Soc. Siam, i. 1914, p. 43).

Buchanga cineracea mouhoti.

Buchanga mouhoti Walden, Ann. Mag. Nat. Hist. (4) v. 1870, p. 220.

Buchanga cineracea (Horsf.); Sharpe, Cat. iii. 1877, p. 250.

Dicrurus cineraceus (part.) Gyldenstolpe, p. 27.

a–d. 4 ♂. Koh Chang I., S.E. Siam. 5–6 Dec., 1914.

e, f. ♂ ♀. Ok Yam, Franco-Siamese Boundary (on coast). 2 Jan., 1915.

g. ♀. Klong Yai, S.E. Siam. 5 Jan., 1915.

h. ♂. Koh Klum I., S.E. Siam. 18 Dec., 1914.

"Iris crimson, blood-red, orange-red or brownish red; bill and feet black. A common bird in open country where isolated trees and bushes occur."—C. B. K.

The three female specimens are all decidedly darker and less grey above, with the heads and tail more blackish, and agree well with the description of *B. nigrescens* (Oates, Faun. Brit. Ind., Birds, i. 1889, p. 315). They are, however, in more worn plumage than the males, while the differences they present from the specimens regarded as *B. c. mouhoti* may also be partly sexual, so that in default of a larger series it would be unsafe to regard the two races as occurring together in the same district.

Buchanga leucogenys.

Buchanga leucogenys Walden; Sharpe, Cat. iii. 1877, p. 251.

Dicrurus leucogenys Robinson & Kloss, Ibis, 1911, p. 72.

a–c. 1 ♂, 2 ♀. Koh Kut I., S.E. Siam. 23–28 Dec., 1914.

d. 1 ♀. Ok Yam, Franco-Siamese Boundary (on coast). 3 Jan., 1915.

"Iris hazel or reddish hazel; bill and feet black. Also observed on Koh Chang."—C. B. K.

Dissemurus paradiseus paradiseus.

Dissemurus paradiseus (Linn.); Sharpe, Cat. iii. 1877, p. 258; Gyldenstolpe, p. 28.

a. ♀. Koh Chang I., S.E. Siam. 10 Dec., 1914.

b. ♀. Klong Yai, S.E. Siam. 5 Jan., 1915.

c. ♀ imm. Klong Menao, S.E. Siam. 9 Jan., 1915.

"Iris crimson or brown; bill and feet black."—C. B. K.

The bird from Siam is the typical race, originally described from Siam by Brisson. Birds from the Malay Peninsula and from Sumatra, Borneo, and Java appear to have the feathers of the crest shorter and somewhat less recurved.

Bhringa remifer.

Bhringa remifer (Temm.); Sharpe, Cat. iii. 1877, p. 257.

a, b. 2 ♀. Klong Menao, S.E. Siam. 9–11 Jan., 1915.

"Iris crimson; bill and feet black.

"In the Malayan region this bird is scarcely met with below 3000 ft., where the previous species is common. In south-east Siam, however, I found both species living side by side at the sea-level."—C. B. K.

With somewhat shorter shafts than is usual in fully developed Malayan birds, but not otherwise differing.

Dicrurus annectans.

Dicrurus annectens (Hodgs.); Sharpe, Cat. iii. 1877, p. 231.

a. 1 ♂ imm. Klong Menao, S.E. Siam. 12 Jan., 1915.

"Iris crimson brown; bill and feet sooty black."—C. B. K.

The specimen is quite immature, but judging by the more even tail it appears to be referable to this species. *D. ater* (Hermann) is much the commoner bird in Siam, the present species being probably only a winter visitor.

Corvus macrorhynchus.

Corvus macrorhynchus Wagl.; Robinson & Kloss, Ibis, 1911, p. 71; Gyldenstolpe, p. 18.

a, b. 1 ♂, 1 ♀. Ok Yam, Franco-Siamese Boundary (on coast). 3 Jan., 1915.

"Iris dark; bill and feet black. Occurring in moderate numbers about the villages, but nowhere so numerous as in Bangkok."—C. B. K.

These specimens are rather small and dull in colour, with the throat hackles poorly developed; they belong to this species and not to *Corvus compilator* Richmond (*C. enca*, auct.).

XXXVIII.—*The Avifauna of Central America: a Study in Geographical Distribution.* By W. P. Pycraft, British Museum, Natural History *.

The composite character of the Avifauna of Central America—the admixture of elements from the adjacent land-areas north and south thereof—is a feature which experience of the phenomena of geographical distribution would lead us to expect. No less readily would it have been possible to foretell that this region would show a greater affinity with South than with North America. The following review is therefore more particularly designed to furnish an analysis of the component elements of this Avifauna, in order, if possible, to discover the factors which have determined its composition.

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The features to be explained are, briefly, the presence in Central America—which lies within the Tropics—of species belonging to the temperate regions to the north, and the absence of corresponding elements from the south Temperate Region: the selective factors which have limited the number of tropical South American species within its borders; the character of its autochthonous types; and the relation of the fauna, as a whole, to that of the Old World and to past geologic times.

In the fulness of time these several aspects of the problem will doubtless be more or less satisfactorily completed; but at the present stage of our knowledge this is far from accomplishment.

Though the remains of extinct birds are unfortunately rare, such as have been brought to light have shown, in the first place, that many forms now confined to the Tropics, in earlier times occurred in western Europe, when the climatic conditions were doubtless widely different from those now obtaining; and, in the second, that some of the most characteristic New World types have been derived from the Old World.

Thus, for example, remains of *Uintornis,* an incipient Woodpecker, and of *Cryptornis,* a primitive Hornbill, have been found in the Eocene both of France and Wyoming. To-day the Picidæ are almost cosmopolitan, being absent only from Madagascar, Polynesia, and Australia; while the Hornbills occur throughout Ethiopia and Indo-Malaya. Remains of *Limnatornis,* a Hoopoe, *Necrornis*, a Plantain-eater, and of a Trogon have been found in the Oligocene, and of *Psittacus* in the Lower Miocene of France. The Trogons, indeed, are represented in the Eocene of France (Phosphorites du Quercy) by three species of *Archæotrogon.*

The Hoactzin (*Opisthocomus*) and the Cathartidæ are commonly regarded as autochthonous New World types; but their remains have also been found in the Eocene of France.

Ornithologists hitherto, in discussing problems of distribution in space, have seldom taken into account that no less important factor, the distribution in time. But even when the evidence from these two sources has been duly weighed, no satisfactory conclusion can be reached without an appeal to the evidence afforded by the genetic affinities of the particular group under discussion. The case of the New World Coraciiformes affords a useful illustration of this. The Trogons may well serve as a starting-point. The centre of dispersal of these birds seems established beyond dispute. They represent an extremely ancient and somewhat isolated group, displaying affinities, on the one hand, with the Caprimulgi and Cypseli (including the Trochili) and the Colii, and, on the other, though more remotely, with the Momotidæ. The majority of living species occur in Central and South America; but two occur in Africa and ten in the Indo-Malayan region. The Trochilidæ are exclusively New World types; so also are the Momotidæ, which, it is to be remarked, are the most aberrant members of the Coraciiformes. The only other representatives of this family which have found their way into the New World are the members of the genus *Ceryle* among the Kingfishers, which have become cosmopolitan. It is worth comment that neither Bee-eaters, Hoopoes, nor Hornbills have found their way into the New World, though the two last-named occur with the remains of Trogons in the Miocene of France. Since the Trochilidæ are undoubtedly but highly-specialized Cypselidæ, it is possible that they may have arisen within the limits of the American continent.

That the Picidæ and Capitonidæ are extremely ancient types there can be no doubt. Fossil remains of the first-named, it has already been remarked, have been found in the Eocene both of France and Wyoming, showing that already in this remote era the family had spread over an enormous area. To-day its members are encountered in every quarter of the globe, save Madagascar, Australia, and Polynesia. The Capitonidæ are unquestionably nearly related to the Picidæ, and must date almost, if not quite, as far back in time. Apparently less able than the Woodpeckers to adapt themselves to changing environments, as is indicated by their restriction, they are confined to the Tropics; yet they have contrived almost to encircle the globe. That the American forms are the oldest seems to be indicated by their arrival in this continent while they were still plastic; for there can be no doubt but that the Rhamphastidæ, Bucconidæ, and Galbulidæ are descendants of some generalized, ancestral member of the Capitonidæ. An interesting confirmation of this view is that only the American Capitonidæ have the habit of turning the tail over the back as in the Toucans.

We may, then, regard the Jacamars, Barbets, and Puff-birds as autochthonous types, having, like the Humming-birds, been developed within the confines of the American continent. A careful study of the various genera is now needed to discover, if possible, the distribution of the least and most highly specialized forms. The latter should occur most frequently north of the Isthmus of Panama.

The Passeriformes, which must now be considered, supplement the evidence furnished by the Coraciiformes as to the source of the avifauna of the New World, and of Central America in particular, even though at present gaps remain to be filled by further anatomical research.

The Passeriformes, it must be remembered, are divisible into four suborders—Eurylæmi, Oligomyodi, Tracheophones, and Diacromyodi. Of these, the Tracheophones are peculiar to the New World. Whence did they come?

The only clues to the solution of this question are such as are to be furnished by structural characters. The most striking of these is the syrinx, which has attained a high degree of specialization, though its peculiarities are more marked in some species than in others—a fact of no little importance in tracing descent.

The syrinx, however, merely furnishes the measure of agreement between the several members of the family, which, both osteologically and myologically, shows affinities with the Tyrannidæ and Pittidæ, on the one hand, and the Eurylæmidæ, on the other. Thus the exclusively American

Tracheophonæ and the Tyrannidæ must be regarded as descendants of a common stock, and probably came from Africa. The balance of evidence is in favour of some primitive Eurylæmid ancestor, if only because the Eurylæmidæ show many striking evidences of affinity with the Cotingidæ, another family exclusively American. So far, it is true, no Eurylæmidæ have been found in Africa; but there is a possibility that *Smithornis*, hitherto regarded as a Flycatcher, may prove to belong to this primitive group. Until comparatively recently the Pittidæ were also regarded as absent from Africa.

As touching the Oscinine Passeres, it is to be remarked that the evidence, on the whole, goes to prove that they are an Old World group. This being so, then the New World members of this group must have entered the New World by two very different routes. The oldest of these was by way of the ancient land-bridge between West Africa and Brazil; the other by way of North America, crossing by way of the Behring Sea on the one side and by way of Iceland and Greenland on the other. As a matter of fact, these two latter routes are being used to-day.

On the whole, it will be found more expedient to analyze the various families now under discussion *seriatim*, according to the arrangement adopted in the late Dr. Bowdler Sharpe's 'Hand-list of Birds,' than to endeavour to arrange them according to their relation to Central America—as species derived from North or South America, as the case may be.

Whether the Muscicapidæ have any representatives in the New World depends entirely upon the evidence which an appeal to anatomy must furnish as to the position of the genus *Polioptila*, numerous species of which range from North America to Paraguay and Argentina. According to some authorities, this genus is undoubtedly Muscicapine, but according to others it belongs to the Turdidæ. A decision on this point is important, since if it belongs to the Flycatchers then its nearest ally is the African genus

Stenostira—a fact which would indicate that the genus entered the New World by means of the now submerged Afro-Brazilian bridge; it has since travelled northwards. If, on the other hand, it belongs to the Turdidæ, then it may as probably have entered from the north and travelled southwards.

That the Troglodytidæ are to be regarded as a South American family seems to be demonstrated by the fact that of the 302 species comprised in this family, 228 are American. Only 33 are found in the vast area north of Mexico, 72 in Mexico and Central America, and 123 in South America.

The Cinclidæ, commonly associated with the Troglodytidæ, seem, on the other hand, to have arisen in the Old World and to have made their way into the New World from the north, travelling along the mountains of the west, southwards into Central America, and beyond to the Andes of Peru.

The Mimidæ, which are by almost universal consent regarded as near allies of the Troglodytidæ, are exclusively American, but apparently southern in origin, since only some four-and-twenty species out of a total of over seventy occur north of Mexico.

The Mimidæ seem to form the annectant link between the Troglodytidæ and the Turdidæ, and must also apparently be regarded as a New and not, as some have contended, as an Old World group. The Myiadestinæ are confined to Central and South America and the West Indies, no mainland species extending beyond the confines of Mexico. Of the more typical Thrushes, the genus *Merula* presents some facts of importance from the distributional point of view. It contains about 115 species, ranging throughout Europe, Africa, Asia, and Polynesia; but of the total number nearly 50 occur in Central and South America, none passing beyond the northern confines of Mexico. Of the genus *Turdus*, but one species occurs in Central America and Mexico and four in North America, of which two winter in Mexico and Central America; while of the genus *Hylocichla*, represented by 15 species, no less than 12 are North American—of these, six winter in Mexico and Central America, and one in Brazil.

So far as the facts of distribution are concerned, the recognition of the three genera *Merula*, *Turdus*, and *Hylocichla* seems to be justified. But if judged by the standard of anatomy, the only satisfactory basis for systematic work, the genera *Merula* and *Hylocichla* should be merged with *Turdus*, which might conveniently be subdivided into three sections.

The absence of the Ruticillinæ and Saxicolinæ from the Central and South American Regions is noteworthy. These groups are, indeed, unknown throughout the American continent, save only in the case of the Saxicolinæ, which are represented by two species of Wheatear. One of these (*Œnanthe œnanthe*) breeds all over Europe, as well as in northern and central Asia, whence it seems to have made its way into Alaska. The other is the Greenland Wheatear (*Œnanthe leucorrhoa*), a bird of passage in Great Britain, breeding in Greenland and Labrador. Thus this genus enters America from opposite sides of the continent, but its range there is strictly confined to the high north, though casual specimens may stray as far south as Louisiana and Colorado.

Inasmuch as the Turdidæ and Sylviidæ are nearly related, it seems curious that the latter should be represented in the New World only by four species of the genus *Regulus*. But such is the case. Guatemala forms their southernmost limit; but only two species, as a matter of fact, pass into and beyond Mexico—*R. satrapa* ranges from North America into Mexico, and *R. calendula* from Repulse Bay and Greenland in the north to Guatemala.

Of the five genera comprising the Sialiinæ, four are peculiar to the American continent. One, *Zeledonia* *, is found only in Central America; *Catharus* occurs both in Central and South America; *Sialia*, a genus containing ten species, ranges from the Lake Regions of Canada southwards to Guatemala and Honduras; while *Ridgwayia* is confined to the Pine Region of Mexico and Central America. *Grandala*, the only extra-American genus, is found in the eastern Himalayas and Thibet.

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* Pycraft, W. P., "On the Systematic Position of *Zeledonia coronata*, with some Observations on the Position of the Turdidæ," Ibis, 1905, p. 1.

The Vireonidæ is a strictly American family, ranging from Arctic America southwards to Brazil. By some authorities this family is regarded as nearly allied to the Sylviidæ, by others to the Laniidæ. The evidence, on the whole, however, seems to show, in the first place, that it is most nearly related to the Muscicapidæ, and, in the second, that two genera—*Vireolanius* and *Cyclorhis*—are wrongly assigned to this family. This fact has a more intimate bearing on the present theme than might appear at first sight; and this because *Vireolanius* is, without doubt, one of the Gymnorhines[*], a group of primitive Shrikes belonging to the Notogæic Realm, while *Cyclorhis* is a genus which belongs to the typical Shrikes and ranges from southern Mexico southwards to Argentina.

The occurrence of Ampelidæ in Mexico and Central America is interesting. Three genera (*Phainoptila*, *Phainopepla*, and *Ptilogonys*) occur within these areas, while a fourth (*Phlogenys*) is peculiar to the Greater Antilles. The typical Waxwing (*Ampelis*) is represented in North America by two species—*A. cedrorum*, which winters in Central America, Cuba, and Jamaica, and *A. garrulus*, which occurs in Arctic America and the northern regions of Europe and Asia. The evidence goes to show that the Ampelidæ are an American group. Their nearest allies appear to be with the Gymnorhine group, the Artamidæ, which range from the Andamans eastwards through the Malay Archipelago to Australia. The typical Shrikes—Laniidæ—are represented in America by six species of the genus *Lanius*. Only one, however (*L. mexicanus*), occurs so far south as Mexico, the rest being confined to North America.

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[*] Pycraft, W. P., "Contributions to the Osteology of Birds.—Part IX. Tyranni, Hirundines, Muscicapi, Lanii, and Gymnorhines," P. Z. S. 1907 p. 352.

The Paridæ is evidently an Old World group which has but recently made its way into America, inasmuch as of 241 species now recognized only 39 are met with in America. Four well-marked genera are represented, ranging from Alaska on the one hand, and Labrador on the other, southwards to Texas and California. Six species enter Mexico, and one (*Psaltiparus melanotis*) extends southward into the highlands of Guatemala. The Mexican species, in like manner, are confined to the highlands. Of these it may be remarked that two represent the genus *Parus* (*P. sclateri* and *P. wollweberi*) and three the Long-tailed Tits, *Acredula* (*A. helviventris*, *A. melanotis*, and *A. julus*): while *Auriparus flaviceps* represents the Penduline Tits.

Mexico forms the southernmost limit of the Sittidæ, another Old World group which occurs throughout North America. Three species are met with in Mexico—*S. nelsoni*, which occurs in the mountains of Chichuahua and Sonora, *S. mexicana* of Puebla, and *S. pygmæa* of western Mexico.

The precise affinities of the Mniotiltidæ, a group peculiar to the New World, yet remain to be determined. Indeed, the group itself is in great need of revision, for it is certainly made up of discordant elements. Some of its members, at any rate, seem to display affinities with the Tanagridæ. But, be this as it may, its members are essentially northern in habitat, for out of 232 species only 82 pass into Mexico and but two species range beyond the northern confines of South America, and many of these occur only as winter visitants. Two species, *Geothlypis cucullatus* and *G. leucoblepharus*, range as far south as Argentina and Paraguay; for the rest the southernmost limit seems to be the northern portion of South America. Other members of this group, it may be remarked, have wandered into the Antilles, Bermuda, and Jamaica, and the Galapagos Archipelago, which have formed centres of isolation for the evolution of new species.

The Wagtails, Pipits, and Larks are but poorly represented in America: the Wagtails, indeed, only by *Motacilla alascensis* in west Alaska; while the Pipits do not number more than 11 species, two of which are North American, the rest ranging from Panama to Patagonia, the Falklands, and South Georgia. That the Pipits should be practically confined to South America is curious. Yet such is the case, for but one species (*Anthus parvus*) enters Panama; though of the two northern species one (*A. pennsylvanicus*) winters in Central America, while *Neocorys spraguei* winters in Mexico. *Otocorys* is the only American genus of the Alaudidæ, of which seven species occur in Mexico, which marks the southernmost range of the genus.

That the Tanagridæ and Fringillidæ are closely related there can be no question. The former are exclusively American, while of the 139 genera of the latter 97 are American. Of this number, 76 (containing 390 species) are met with only in Mexico, Central and South America. Of the Mexican species (103 in number) the dominant types are North American—that is to say, they are obviously more nearly related to the northern than to the southern forms. Central America has but 53 species, while no less than 234 are South American.

The Tanagridæ are not only, as has just been stated, exclusively American, but they are peculiarly South American: for of the 59 genera now generally recognized, only 14, containing 98 species, occur in Central America, and but 4 genera, including 11 species, in Mexico; while North America has but one genus, including 4 species, all of which winter either in Mexico or Central America. Allowing for a few species which occur in the Antilles, nearly 700 of the total of 824 species are confined to South America.

The nearly related Cœrebidæ are, in like manner, to be regarded as a South American group, for of 11 genera and 94 species only 3 genera, represented by as many species, occur in Mexico, while Central America harbours 10 species, representing 5 genera. The genus *Cœreba*, it is interesting to note, is almost confined to the Antilles, for of 23 species but six occur on the mainland, distributed between Mexico, Central and South America.

It would seem, however, that South America, or probably, to be more exact, the ancient Brazilian land-mass, is to be regarded as the centre of origin of this group. This much at any rate is the contention of Dr. Percy Lowe, who, in a review of this genus ('Ibis,' 1912, pp. 489–528), attempted to trace the probable lines of migration of the two distinct subdivisions into which it may be split—the more primitive migrating northwards to occupy the Lesser Antilles, while a differentiated offshoot of the ancestral stock pursued a course by way of the Andean chain, through Central America, and thence into the Greater Antilles. Dr. Lowe showed that the distribution of these two races corresponded in a somewhat remarkable way with the ancient configuration of the land.

The Starling-like Icteridæ are also an exclusively New World group, and apparently arose in South America, whence they have extended northwards, for of the 186 recognized species one-half (88) are South American, 31 occur in Central America, and no less than 40 in Mexico; but many of these last are North-American species which come south for the winter. Only 27 species occur north of Mexico.

The Corvidæ in the New World are represented by some 14 genera, chiefly Jays. Eight species of these genera are found in Mexico and eight in Central America, while three are confined to South America and three do not pass beyond the confines of North America. Three genera—*Calocitta*, *Cissolophus*, and *Psilorhinus*—are confined to Mexico and Central America.

The evidence, on the whole, points to the Old World as the centre of dispersal of the Corvidæ; but so far no explanation is forthcoming for the dominance of the Jays in the New World.

Huxley made a memorable contribution to the study of the geographical distribution of animals when (P. Z. S. 1868, pp. 294–319) he published his paper, "On the Classification and Distribution of the Alectoromorphæ and Heteromorphæ." In that contribution he pointed out the striking differences between what he termed Peristeropod and Alectoropod members of the Galli and the peculiarities of their distribution. But, while demonstrating the intimate relationship between the Old World Megapodidæ and the New World Cracidæ, he made no attempt to account for their geographical isolation.

The clue to this problem is apparently furnished by the African Numididæ, which are to be regarded as the nearest living representatives of the ancestral Galline stock. About this there can be little doubt, for they present many features in common with the Phasianidæ and Tetraonidæ, on the one hand, and with the Cracidæ and Megapodidæ, on the other.

That this stock had its birth within the African continent, and that its main types were evolved and distributed over the areas they now occupy, at least approximately, during the Paleocene epoch, is a conclusion which seems justified by the discovery of the remains of a small generalized form, *Gallinuloides*, in the Eocene Green River formations of Wyoming—that is to say, in a later deposit than the Paleocene, and answering to the lower Eocene of European palæontologists; while the genera *Palæortyx*, *Taoperdix*, and *Tetrao* occur in the upper Eocene of France. *Coturnix*, again, dates back to the Eocene, while *Phasianus*, so far, has not been met with earlier than the Miocene of France. Finally, in this connection, it is certainly significant that one of the most aberrant members of the Galliformes, *Opisthocomus*, now confined to north-eastern South America, should be represented by a closely-allied form, *Filholornis*, in the upper Eocene of southern France.

The South-American continent contains a greater assemblage of primitive Gruiformes than any other region of the world; yet no attempt has so far been made to discover what light these may throw on the problem of ancient land-connections. Briefly, of five sharply-differentiated families—Cariamidæ, Psophiidæ, Heliornithidæ, Eurypygidæ, and Aramidæ—only two are represented in Central America, and only one (the Heliornithidæ) is met with in the Old World. The ancestors of these autochthonous types are obviously to be sought for in the Old World, and apparently in Africa. This much is indicated, in the first place, by the occurrence in western Africa of *Heliornis,* which turns up again in Assam and Sumatra. But there are two other families in this assemblage which have to be taken into account. One of these is the Rhinochetidæ, represented by the Kagu of New Caledonia, the other the Mesitidæ of Madagascar.

In *Mesites* we probably have the nearest living representative of the ancestral stock from which the Gruiformes, on the one hand, and the Galliformes, on the other, were derived. A discussion of the relative degrees of affinity between these several types would be inadmissible here. Suffice it to say that the relationship is universally admitted. The inferences to be drawn therefrom are hardly less open to dispute. The fact that the giant flightless bird *Phororhacos* of the Miocene of Patagonia is nearly related to the Cariamidæ, indicates the date of entry of these several types into South America, and this accords well with what has been adduced in regard to the Galliformes and Coraciiformes. The presence of members of the Heliornithidæ and Aramidæ in Central America is extremely interesting, for they must be regarded as comparatively late immigrants, forcibly demonstrating the mode of distribution along narrow tracts linking large land-masses.

The Struthious types—Rheidæ and Tinamidæ—are the only others which can now be discussed with profit, and in the matter of their distribution they present some puzzling features. Only one of these families—the Tinamidæ—occurs in Central America, but they are doubtless comparatively late immigrants thereto. What has to be accounted for is the presence of Struthious birds at all in the New World, for it seems clear that these are Old World types, of which the most primitive living members are the Emus of the Australian Region. After these comes the African Ostrich. The American Struthiones, it is significant to note, present characters in common, on the one hand with the Æpyornithidæ of Madagascar, and on the other with the Dinornithidæ of New Zealand.

This interpretation is borne out by the evidence furnished by the distal end of the tibio-tarsus of an indubitably Struthious bird—*Eremopezus eocænus*—from the upper Eocene of Birket-el-Querun, Fayum. This fragment, remarks Dr. C. W. Andrews, who discovered it, bears a close likeness to the distal end of the tibio-tarsus of the Dromæidæ and the Rheidæ, rather than to that of the Æpyornithidæ or Struthionidæ. Thus the Ethiopian region has produced at least three Struthious types, members of which seem to have passed westwards on the one hand into South America, giving rise to the Rheidæ and Tinamidæ, and eastwards on the other, giving rise to the Dromæidæ and Dinornithidæ. The discovery of phalangeal bones of a Struthious bird apparently nearly allied to the Emus in the Pliocene of the Siwaliks, lends further support to this interpretation. It is to be hoped that remains will yet be found of the pelvis of *Eremopezus* and of the Indian *Hypselornis*, for it is to be noted that the pelvic girdle of *Æpyornis*, *Dinornis*, and the Tinamous is of the typical broad type; while that of *Struthio*, *Rhea*, and *Dromæus* is laterally compressed to a remarkable degree. This point, however, raises questions which have but an indirect bearing on the present problem.

SUMMARY.

A very brief survey of the avifauna of Mexico and Central America will show that it is composed in part of Nearctic, and in part of Neotropical species, the latter predominating, while some are endemic.

Examined in more detail, it will be found that the representatives of the tropical (South-American) species are in part the descendants of the autochthonous South-American fauna, and in part of South-American species derived from the Old World and apparently from Africa. These migrations, it is important to note, have been performed in each case, not by sudden and swift aërial journeys, but by means of a slow increase of range over a continuous land-surface;

in the one case by an Afro-Brazilian bridge, long since submerged, and in the other by the still-existing Isthmus of Panama, which has persisted without interruption since Miocene times.

While there is evidence to show that in some cases northern species have succeeded in extending their range, not only into subtropical and tropical regions, but into the temperate zone beyond, as in the case of the Troglodytidæ, the southern tropical types do not display similar powers of adaptation. Species evolved within the temperate regions rarely succeed in establishing a hold within the tropical zone, save when they are able to seize upon elevated plateaux or mountain-ranges. This being so, it is clear that the character of the avifauna of the areas now to be discussed is not merely determined by "land-bridges," but also by matters of climate and temperature, and especially the latter. With a low mean temperature, which is as much a matter of altitude as of latitude, Central America would have been as free from invasion from the south as it would have been if the Isthmus of Panama had remained submerged.

The effectiveness of aquatic barriers being admitted, then the existence of the Afro-Brazilian land-bridge becomes almost a necessity to account for the presence, in South and Central America, of types indubitably of African affinities. Except by means of a continuous land-surface, and an equally continuous environment—that is to say, of tropical conditions,—how are we to account for the distribution of the Finfoots, for example, which extend across central Africa and eastwards into Burma, Assam, and Sumatra on the one hand, and into Central and South America on the other. There is not the slightest ground for supposing that these birds were ever migratory, in the usual sense of the term. The migratory instinct, indeed, is always associated with strongly contrasted seasonal changes, such as are wanting in tropical and sub-tropical regions. What applies in the case of the Finfoots applies with equal force to the Peristeropod Galliformes, the Capitonidæ, and the Trachæophone and Oligomyodian Passeres. If the Afro-Brazilian land-bridge be disallowed, then we are left but one other interpretation to account for their occurrence in Central and South America, which is to suppose that they travelled north-eastwards through Asia, and entered the western hemisphere by way of North America, whence they made their way southwards, leaving no trace of their journey. This seems incredible. Hence, then, the study of the avifauna of Central America yields results of a most far-reaching character.

Whenever the problems of Geographical Distribution are discussed, the evidence afforded by birds is commonly ruled out of court, or is, at any rate, relegated to a subsidiary position, on the assumption that from their powers of flight, and proneness to migration, they can afford no reliable data. This assumption is by no means justified, and from its general acceptance much valuable evidence has been missed. It has been overlooked that migratory habits obtain only among birds inhabiting temperate regions subject to marked seasonal changes—that is to say, to a considerable lowering of the temperature during the winter months. But even here only such species are affected as require an optimum temperature all the year round, and especially during the winter and reproductive periods.

This view I ventured to put forward some time ago[*] in opposition to the commonly accepted view that these periodic movements were entirely due to the inability of the migrants to find food during the winter months in the areas which, during the summer, afforded an abundance. This is only partly true, and in the case of insectivorous birds only. If food were the only controlling factor there would be no need for the return journey of such as were driven south, for in so doing they are leaving a land of plenty to face possible famine, from late frosts and innumerable perils on their passage. That they are driven north with the awakening of the procreative instincts can be demonstrated with some show of certainty by the movements of the migrants of

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[*] Pycraft, W. P., 'The Infancy of Animals,' p. 93.

Great Britain. In the autumn our home-bred Woodcocks and Thrushes, to take but two diverse types, leave us for the south, when their places are at once taken by members of the same species bred in more northern areas. That the departing birds would have starved if they had remained is proved to be an unfounded inference from the fact that the incoming birds find a sufficiency. Again, the Redwing and the Fieldfare—among a number of species—come south, to us, for the winter, but depart north in the spring to breed. These movements are clearly determined by temperature. The birds bred in this country are unable to stand the winter and must perforce move south, while those bred further north find our comparatively mild winters tolerable. The return journey is undertaken, in every case, though unconsciously, for the sake of the young, which would be unable to withstand the heat of the winter resort during the summer months. That this is so is shown by the distress which nestlings display during exceptionally hot days. But this distress is shared no less by the sitting and brooding bird. It has been observed alike in the Snipe crouched in the sedge-grown swamp, the Norfolk Plover out on the sandy heath, and the Razorbills and Guillemots on the ledges of cliffs towering above the sea, where one would suppose that a breeze, if only a light one, was always blowing. The signs of suffering are everywhere the same —the open beak, dribbling from the mouth, and every feather raised to admit as much air as possible. Thus affected, how would it go with such as winter in Africa if they stayed there to breed?

But, apart from this, it has been overlooked that there are certain types of birds which are unable to migrate owing to the high degree of specialization which they have undergone in regard to their food. The Toucans, Hornbills, Touracous, and Parrots afford instances of this. In the event of a shortage of food-supply, either from over-population or from any material lessening of the normal food-supply, all which left the normal boundaries of the tribe in search of food would perish by starvation, even if they possessed the power of long-sustained flight, which is commonly wanting in birds whose lives are passed in circumscribed areas.

The Avifauna of Central and South America bears out these contentions: for the stable population of these regions, as distinct from the utterly different migratory species, is non-migratory. Such species as have passed from South into Central America have passed as a consequence of the gradual extension of their range, and not a process of colonization by migrants placing a sudden and a wide space between themselves and their ancestral home.

These facts have a more important bearing on the subject of the geographical distribution of birds than is hitherto supposed, for they demonstrate, in no uncertain way, the important part played by temperature, as distinct from climate. For temperature, in regard to some species, may serve as a barrier as effectively as would a desert or a broad belt of water; while with others it may serve no less efficiently as a bridge. It is temperature, not elevation, which makes a barrier of a mountain-chain: temperature, due to altitude, enables birds of temperate regions to enter the zone of the tropics. By such means the Paridæ, Ampelidæ, and many of the Fringillidæ—for example, birds of northern latitudes—have been able to penetrate through Mexico and into Central America, travelling by way of the oak and pine forests of the Alpine regions, at an altitude of from 5000 to 10,000 feet and even higher.

Among the Fringillidæ a special interest in this connection attaches to the genus *Junco*, which has spread from North America southward, along the highlands of Mexico, to Costa Rica, giving rise to new species all along the route. Thus *J. dorsalis* ranges from New Mexico to Central America, *J. phæonotus* inhabits the mountains of central and south Mexico, *J. fulvescens* occurs only in the mountains of Chiapas, in south-eastern Mexico, *J. alticola* is met with only in the mountains of Guatemala, and *J. vulcani* on the volcano of Irazu in Costa Rica. How these several mountains became stocked is by no means apparent, but one very important inference is obvious: these several species have arisen by isolation, each mountain has become an island, cut off from all intercourse with its neighbours. These mountain-tops are as much islands as they would be if by subsidence they were sunk beneath the sea, leaving only their tops exposed. The isolating factor is probably the simple restraint of contentment. The birds do not increase beyond the limits of their food-supply, and suffer no extremes of climate ; hence they have no incentive to travel. The fact that so many distinct species have been evolved here points to a far distant past, when the ancestral stock was generally distributed along the lower ground.

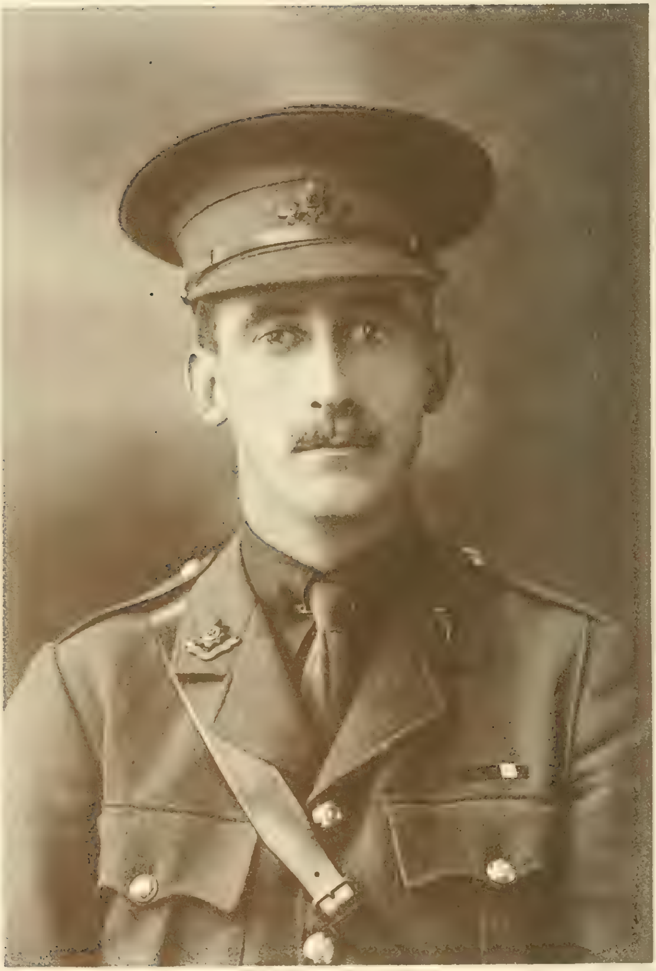
A precisely similar process of specific differentiation is exhibited in the case of the genus *Sporophila*, which has spread from Mexico, through Central America, and over the tropical belt by means of this temperature-bridge into South America, where, travelling along the Andes, it has given rise to new species in Peru and Argentina. Similarly, the genus *Spinus* (*Chrysomitris*) has contrived to run the whole length of both Americas, from Labrador to Tierra del Fuego and the Falklands—to say nothing of its range outside the New World.

Instances of this kind could easily be multiplied, but enough has been said to demonstrate the influence of the Mexican and Central American highlands on the avifauna of South America, and to bring out the singularly interesting fact that with an identical highway South America has contributed nothing to the avifauna of the northern portion of the continent.

It has already been remarked that species attuned to a temperate climate rarely develop the capacity to live within the tropics. There are some exceptions to this rule. One such is afforded by the American Wrens, which range from Alaska to Patagonia, inhabiting every possible kind of country. The Brown House-Wren (*Troglodytes furvus*) of South America, for example, has been described as ubiquitous, being equally at home either in the tropical forests, deserts, reed-beds, or the cold uplands of Patagonia.

The dense forests of Central America, which at the southern edge of the great Mexican plateau sweep northward on either side along the seaboard to Mazatlan on the west and Matamoras on the east, have exercised a profound selective influence on the avifauna of this region, as well as on Mexico. The characteristic gloom and barrenness of the interior of such forests must have proved a formidable barrier to the northward advance of ground-dwelling species. Certain of the Tinamous, however, which have become adapted to the conditions of forest-life, have contrived to penetrate as far as Mexico. The Rheas, however, being, like most of the Tinamous, birds of the open country, have been excluded. The real life of such forests is concentrated upon the tops of the trees, which teem with life. Here is a blaze of colour and an abundance of fruit and insect-life; and hence may be explained the presence in Mexico of Macaws, Penelopes, Guans, and Curassows. But the presence of these birds makes the absence of so many other tropical South American species the more conspicuous.

Finally, it is to be observed that though the Isthmus of Panama forms a bridge connecting the South American Continent with the smaller tropical land-area of Central America, this bridge has formed by no means an open highway for the intermingling of the faunas of north and south. On the contrary, only such species as were adapted to a tropical temperature and the conditions of a forest-life could travel along the lowland route, while such only as were adapted to a low temperature and the conditions of the terrain could pass southward over the highland route. This limited interchange of species between the two areas has only been effected by a process of slow infiltration, not by a rapid interchange. In the Isthmus of Panama, then, we have, perhaps, the best actual demonstration of the limitations and extent of a land-bridge as a highway between otherwise isolated areas that the world can afford.



RICHARD BOWEN WOOSNAM.

XXXIX.—*Obituary.*

(Plate IX.)

Richard Bowen Woosnam.

The death of Lieut. R. B. Woosnam, killed in action in the Gallipoli Peninsula on June 4 last, adds another to the increasing list of workers in zoology who have given up their lives for their country in the great war.

Born at Tyn-y-Graig, Builth, Brecknockshire, on the 17th of November, 1880, the son of Bowen Pottinger Woosnam, he was educated at Wellington College. On the outbreak of the South African War he joined the 4th Welsh Militia, and was thence gazetted to the 2nd Worcester Regiment, with which he served throughout the South African campaign. After the war his taste for natural history prevailed against his military ardour, and he resigned his commission. On the outbreak of the present war he joined the 4th Battalion of his old regiment, the Worcesters, and proceeded to the Dardanelles, where he fell on June 4 last.

One who knew Woosnam intimately writes as follows :—

" My acquaintance and subsequent warm friendship with Woosnam dates from the termination of the South African War, in 1903, after he had resigned his commission in the Worcesters. I had previously heard of him in letters from our mutual friend, the late Major Gerald Barrett-Hamilton, who had met him during the South African campaign, and had been much struck by his personal charm and by his unusual ability as a field-naturalist. About the same time I received a letter from Woosnam himself saying that he and a retired brother officer, Mr. R. E. Dent, with a similar taste for natural history, were anxious to make a collecting trip in Cape Colony, and desired to offer their services to the British Museum (Natural History), a proposal which was readily accepted. Their subsequent wanderings resulted in the formation of valuable collections of beautifully prepared specimens of mammals and birds from the Kuruman district of Cape Colony, Bechuanaland, the Orange River Colony, and the Vaal River. The collection from Kuruman was of special interest, for it included typical examples of many of the species described by Sir Andrew Smith after his early explorations in 1834–6. Most of Smith's types had been purchased by the British Museum at his sale in 1838, but the species were very imperfectly represented in the national collection, and this fresh material was therefore of special value.

"On his return to England in 1904 I met Woosnam, and spent many delightful days with him talking over plans for future exploration while he was writing out his field-notes on the birds collected in South Africa. His was, indeed, an unusually pleasing personality, which at once attracted all with whom he came in contact. Good to look at, tall, rather slight, and cleanly built, full of life and energy; add to these physical attractions the finest character imaginable, strong, delightfully modest and simple, transparently honest. Altogether a man on whom one could absolutely rely on all occasions. As a skilled field-naturalist and taxidermist he had few equals, and few could handle a gun or rifle better, while in all sports requiring field-craft or skill he was proficient.

"In the early part of 1905 Woosnam accompanied Colonel A. C. Bailward on a journey from the Persian Gulf through western Persia to Armenia and across that country to the Black Sea. The fine collections of mammals and birds formed by him were presented by Colonel Bailward to the British Museum, and an account of the birds by Mr. H. Witherby with Woosnam's field-notes appeared in the 'Ibis', 1907, pp. 74–111. On his return from Persia he immediately joined me in making the final arrangements for a long contemplated exploration of the great range of mountains in Equatorial Africa known as Ruwenzori or the 'mountains of the Moon,' which had long attracted the attention of naturalists in all parts of the world. In Woosnam I found an ideal leader. The record of this great undertaking, which was so ably and successfully carried out in the face of many difficulties, has been fully set forth in volume xix. of the Transactions of the Zoological Society of London (1909–10). His companions were Mr. R. E. Dent, the Hon. Gerald Legge, Mr. Douglas Carruthers, and Mr. A. F. R. Wollaston, all of whom ably assisted in securing the splendid results achieved by this famous expedition. They reached an altitude of 16,794 ft., the highest point, 16,815 ft., being subsequently conquered by the Duke of the Abruzzi. At the conclusion of their work on the mountain in November, 1906, Woosnam and Dent returned home by the Ituri and Congo route, and added more new and interesting specimens to the huge collections from Ruwenzori already sent home. On his return Woosnam read an interesting paper on Ruwenzori before the Royal Geographical Society, and in recognition of the signal services he had rendered to science on this and other occasions the Zoological Society of London awarded him their silver medal, and made him a corresponding member in 1910. He was elected a member of the British Ornithologists' Union in 1909.

"Soon after his return to England Woosnam once more accompanied Colonel Bailward on a trip to the Caspian Sea and Elburz Mountains between February and May, 1907. Excellent collections were made, and, as on the previous occasion, presented to the British Museum, the birds being recorded in the 'Ibis,' 1910, pp. 491-517. From this expedition Woosnam returned in rather indifferent health; the sudden change from the Tropics to the high ground on the Elburz had brought on an attack of dysentery and subsequent colitis, from which he suffered for some time after his return to England, and did not finally shake off till 1909, when he returned to South Africa to explore the Kalahari Desert. On that occasion he was accompanied by the Hon. Gerald Legge, one of his companions on Ruwenzori. The principal object of this journey was to make a collection of the fishes of Lake Ngami, to which very special interest attached, as the lake was rapidly drying up, and the extermination of many of the peculiar species was probably only a matter of a few years. Birds were not neglected, and an account of this part of the collection, with an itinerary by Woosnam, will be found in the 'Ibis,' 1912, pp. 355–404.

"In 1910 Woosnam was appointed by the Secretary of State for the Colonies to the vacant post of game warden in British East Africa, a position which he held till he returned to England a few months ago and rejoined his old regiment, the Worcesters, at Devonport. Thence he was sent to join the 4th Battalion at the Dardanelles, where he was killed on June 4 while gallantly leading his men in an attack on the Turkish trenches. As his colonel wrote, 'such men are few and far between; his name was specially mentioned for good and gallant conduct on June 4.'

"As game warden in British East Africa he was a great success, and brought his department into a high state of efficiency. He did his duty without fear or favour, but was nevertheless one of the most popular and highly esteemed men in the Protectorate. He has been justly described by one of his colleagues as 'the whitest man he ever met.' He was mainly instrumental in bringing together the International Conference for the Protection of Wild Animals in Africa, which met last year in London, and his carefully thought out and thoroughly practical plans were generally agreed to, and will no doubt come into operation when peace has been once more restored, but sadly will he be missed during the carrying out of them."

Lewis Neil Griffith Ramsay.

Although not a member of the Union, ornithology has suffered a great loss in the death, at the early age of 25, of Lewis N. G. Ramsay at Neuve Chapelle on March 21 last.

Born at Aberdeen on February 3, 1890, he was the second son of Professor Sir William Ramsay, the well-known archæologist and classical explorer. He studied at Aberdeen University and subsequently at Christ's College, Cambridge. He graduated M.A. at Aberdeen in 1910 and B.Sc. in 1913.

From an early age Ramsay was a bird-lover and amassed a great amount of data regarding the avifauna of his native Aberdeenshire. He travelled through Asia Minor in the summer of 1907, and contributed an interesting paper on his observations there to the 'Ibis,' 1914, pp. 365–387. He also assisted Mr. Eagle Clarke in preparing an account of the ornithology of the Scottish National Antarctic Expedition of 1902–4, himself contributing several sections.

In September of last year he joined the 4th Batt. Gordon Highlanders, becoming a sergeant. Later on he obtained a commission, and was sent with the 2nd Batt. of the same regiment to the front.

XL.—*Notices of recent Ornithological Publications.*

Blathwayt on the Birds of Lincolnshire.

[The Birds of Lincolnshire. By the Rev. F. L. Blathwayt, M.A., M.B.O.U. Trans. Lincoln. Nat. Union, Louth, iii. 1915, pp. 178–211.]

It is a remarkable fact that, notwithstanding its size and its situation, which makes it the landing-place of many rare migrants, no complete list of the birds of Lincolnshire had yet been published until Mr. Blathwayt's, now noticed.

With the ornithology of Lincolnshire the names of John Cordeaux and Mr. G. H. Caton Haigh are always associated as well as that of the present author, but as compared, for instance, with Norfolk, there does not appear to be nearly so much activity among bird-lovers in Lincolnshire, although the opportunities for noticing and recording rare species, at migration time especially, in the narrow strip of country along the coast known as the "marsh" are very full of promise.

In the present list, which follows Howard Saunders's nomenclature and arrangement, 296 species are recorded, but of these at least 10 are doubtful.

Among the rarer species mentioned *Phylloscopus viridanus, Lusciniola schwartzi,* and *Locustella lanceolata* were all obtained for the first time in the British Islands, at North Cotes, by Mr. Haigh, while the Bearded Tit, the Kite, the Bittern, Black Grouse, and Bustard are all extinct as breeding-birds within the county.

We notice with pleasure that a more comprehensive work on the birds of this county is being prepared by Mr. Caton Haigh, and we hope before long to have the pleasure of seeing it published. In the meantime Mr. Blathwayt's list will doubtless be of much value to all interested in the avifauna of Lincolnshire.

Burns on the Length of the Incubation-period in Birds.

[Comparative Periods of Deposition and Incubation of some North American Birds. By Frank L. Burns. Wilson Bulletin, Chicago, Ill., 1915, pp. 275–286.]

The information contained in this paper has been collected from various sources, both published and unpublished. A list of the genera in which either the male only or the female only or both sexes perform the duties of incubation is first given. In the case of North American birds only the Phalaropes and the Spoon-billed Sandpiper (*Eurynorhynchus pygmæus*) appear to fall in the first category. The period of deposition does not seem to be governed by any very definite law, though the size of the egg in relation to that of the bird may have something to do with it, as in the case of a larger egg a bird may require some time to recuperate. The interval seems longest in the case of the Condor, which only lays two eggs, and in which the interval between the two layings amounts to a week or ten days. Finally, a systematic list of the period of incubation is given for all those birds on the North American list about which there is any direct evidence.

Buturlin on Russian and Eastern Palæarctic Birds.

[*Hæmatopus ostralegus longipes,* subsp. nov. By S. A. Buturlin. Messager Ornith., Moscow, i. 1910, pp. 36–37.

Laiscopus collaris kwenlunensis, subsp. nov. Id. ibid., pp. 188–9.

Coracias garrulus caucasicus, nov. subsp. Id. ibid., pp. 190–2.

Parus cinereus ferghanensis Buturlin. Id. ibid., iii. 1912, pp. 163–4.

Corvus macrorhynchus mandshuricus, subsp. nov. Id. ibid., iv. 1913, p. 40.

Names of the *Parus cinereus* group. Id. ibid., p. 51.

Notes on Distribution of *Penthestes* (=*Pœcile*). Id. ibid., pp. 116–7.

Cyanistes cyanus yenisseensis But. et Tugar. in Kiev. Id. ibid., pp. 118-9.

Birds of the Ussuri-land. Id. ibid., vi. 1915, pp. 89-114.

Erythropus vespertinus transriphæus, nom. emend. Id. ibid., vi. 1915, pp. 126-7.

Uragus sibiricus ussuriensis, subsp. nov. Id. ibid., p. 128.

Pinicola enucleator sakhalinensis, subsp. nov. Id. ibid., pp. 129-130.

Nucifraga caryocatactes altaicus, subsp. nov. Id. ibid., pp. 131-2.

Strix uralensis yenisseensis, subsp. nov. Id. ibid., pp. 133-4.

Pinicola enucleator altaicus, subsp. nov. By G. I. Poljakov and S. A. Buturlin. Ibid. pp. 139-140.

The Name of the Siberian Herring-Gull. By S. A. Buturlin. Ibid. pp. 148-9.]

Our Foreign Member, Mr. Buturlin, has recently sent us a number of short papers, all extracted from the Russian ornithological journal, Messager Ornithologique, which shows that activity in creating new subspecies is not confined to English and American workers.

The papers, though written in Russian, are all provided with a summary in English, so that the contents can be easily made out without any knowledge of the Russian tongue. It is hardly necessary to comment on them, as the titles in nearly all the cases explain their contents.

The longest one, on the birds of Ussuri-land, contains an account of the collections made by Capt. V. C. Arseniev, who obtained examples of 64 species in 1906-1910, among them two unnamed races—*Corvus macrorhynchus mandshuricus* and *Perisoreus infaustus maritimus*.

The last paper suggests that Mr. Iredale's new name (*Larus fuscus antelius*) for the Siberian Lesser Black-backed Gull should be restricted to the western race—the eastern race being *Larus taimyrensis taimyrensis* Buturl., 1911, and the western *L. t. antelius* Iredale, 1913, according to our author.

Chapman on new Colombian and Central American Birds.

[Descriptions of proposed new birds from Central and South America. By Frank M. Chapman. Bull. Amer. Mus. N. H. New York, xxxiv. 1915, pp. 363-388.]

This is a continuation of previous papers published in the same journal, and contains the descriptions of fifteen new subspecies mostly obtained in Colombia, and many of them by Mr. Chapman himself.

In some cases a review of all the subspecific forms of a species are given, and this undoubtedly makes a paper of this sort of much greater value to those who have to consult it later. This is notably the case with the Sparrow-hawk, *Cerchneis sparverius*, of which seven forms are recognised from various parts of South America.

Coale on the Trumpeter Swan.

[The Present Status of the Trumpeter Swan (*Olor buccinator*). By Henry K. Coale. Auk, xxxii. 1915, pp. 82–92, pls. vii.–x.]

The Trumpeter Swan, first made known to ornithologists by Dr. John Richardson "from the interior of the fur countries" in 1831, seems to have become very rare of late years; in fact, in the opinion of many members of the A.O.U. who discussed the matter at a meeting held in New York City in the fall of 1913, this magnificent bird is rapidly nearing extinction.

Mr. Coale has in this paper reviewed the literature on the subject, and has instituted enquiries among the various museums and institutions in the United States and Canada, as to the numbers of examples there preserved. He finds that in the whole of North America there are preserved in museums only sixteen specimens which have authentic data. These were collected between the years 1856 and 1909.

It looks as if the Trumpeter would very shortly share the fate which has already overtaken the Passenger Pigeon, unless some efforts are made to preserve it.

Cory on new South American Birds.

[Descriptions of new birds from South America and adjacent islands. By Charles B. Cory. Publ. Field Mus. N. H., Chicago, Ornith. Ser. i. 1915, pp. 293–302.]

Eighteen new subspecies and three new species—*Nothoprocta ambigua* from Peru, *Odontophorus plumbeicollis* and *Threnetes longicauda* from Ceará, Brazil—are described from Peru, Brazil, Venezuela, and some of the West India Islands.

Dabbene on new Argentine Birds.

[Description d'un nouveau genre et d'une nouvelle espèce de Pic provenant du nord-ouest de la République Argentine. Par Roberto Dabbene. An. Mus. Nac. Hist. Nat. Buenos Aires, xxvii. 1915, pp. 75-81.

Una ave nueva para la Argentina. Par Roberto Dabbene. Bol. Soc. Physis, i. 1914, pp. 435–436.

Otres especies de aves nuevas para la Argentina. Bol. Soc. Physis, i. 1915, pp. 532–533.]

For a rare Woodpecker, described in 1888 by Cabanis from the province of Cordoba under the name of *Phlœotomus schulzi,* Señor Dabbene now proposes a new generic name, *Neophlœotomus.* He also describes and figures, apparently from the same province of the Argentine, a new species of *Neophlœotomus* (*N. shiptoni*), differing from the type merely in the presence of a white band along the shoulders.

It does not appear that Señor Dabbene has had an opportunity of examining the type or other examples of Cabanis's species, and we venture to suggest that it is unlikely that two distinct species of so large and well-characterised a form would inhabit the same locality.

In the two other short notes Señor Dabbene adds to the avifauna of the Argentine *Manacus manacus gutturosus, Harpiprion cayennensis*, *Dendrocygna discolor*, and *Sporophila pileata,* all Brazilian species.

Mathews on Australian Birds.

[The Birds of Australia. By Gregory M. Mathews. Vol. iv. pt. 3, pp. 193-334, pls. 224–233. London (Witherby), 1915.]

In this part the Pelecaniformes are continued with the Darters, the Gannets, the Frigate-birds, the Tropic-birds, and the Pelicans. The first and last of these give little trouble, but with regard to the other three Families the importance of the questions involved can hardly be overestimated. So great is it, indeed, that we hope Mr. Mathews will at some future date reprint his monographical essays in a separate form, and include the Petrels and such widely ranging birds; for they might happen after a time to be overlooked, if only published in a work supposed to be devoted to the Avifauna of Australia alone. Many points are brought out by the author, as he traces the history of the species from Linnæus downwards, checks or corrects their synonymy, and discusses their distribution in the world generally.

With regard to the Gannets Mr. Mathews adopts the generic title *Piscatrix* of Reichenbach for the Linnean *Pelecanus sula*; *Sula* of Brisson for Boddaert's *P. leucogaster*; his own two genera *Parasula* and *Sulita* for *S. dactylatra* of Lesson (=*cyanops* auct.) and *S. bassana* of Linnæus respectively. These genera differ in the number of rectrices, size, colour-changes, and adult plumage, while the curious difference in the scutellation of the feet is shown by woodcuts for *Piscatrix* and *Sula*. No new subspecies are proposed, but the author's *leucogaster rogersi* is dropped, and *piscator* of Linnæus is shown to be too doubtful for acceptance.

Under the Frigate-birds, which are given even fuller treatment than the Gannets, the first point is that *Fregata* is considered by Mr. Mathews a very doubtful member of the Pelecaniformes (=Steganopodes), and it may be as well to state here that he totally denies the claim of *Phaëthon* to be included in the order, for he looks upon it as an aberrant Lariform genus. The next point is that *Fregata aquila* L. is not the wide-spread species that has been supposed; this is *F. minor* (Gm.) of the tropical and subtropical seas, whereas *F. aquila* occurs only around Ascension Island in the Atlantic. Frigate-birds are now stated to be "no wanderers," but to inhabit very definite areas. Other species recognised are *F. ariel* and *F. andrewsi* Mathews. An article from the Austral Avian Record, vol. ii., is reprinted to show the subspecies proposed.

With regard to the Tropic-birds, *Phaëthon* is preserved with the type *P. æthereus* L.; *Scæophaëthon* Mathews is once more used for *P. rubricauda*; and *Leptophaëthon* Mathews for *P. lepturus*: the division of the original genus being warranted in the author's opinion by size and colour of plumage. The species and subspecies are noted on pp. 303, 310, and among the latter three are new, namely *S. rubricauda rothschildi* from the Sandwich Islands area, *S. r. brevirostris* from the Bonin Islands, and *Leptophaëthon lepturus ascensionis* from Ascension and Fernando Noronha Islands.

The generic term *Catoptropelicanus* (*sic*!) Rchb. is used for the Australian Pelican, on account of its feathered lores.

Murphy on the Penguins of South Georgia.

[The Penguins of South Georgia. By Robert Cushman Murphy. Science Bull. Mus. Brooklyn Inst. Arts and Sci. vol. 2, 1915, pp. 103–133, 25 plates.]

Mr. R. C. Murphy, of the Brooklyn Museum, recently made an expedition to the Antarctic in the sailing brig, 'Daisy,' and spent five months, November 1911 to March 1912, at South Georgia, where he had plenty of opportunities of watching and studying the Penguins and other birds and animals of that unhappy island, where of late years so much of the animal life has been ruthlessly destroyed. It is to be hoped that now that the island has been made a dependency of the Falkland Islands, and some sort of rule and order introduced, the animals and birds will be able to recover themselves, and to restock the island and adjacent seas.

There are only two species of Penguins at all common at South Georgia—The King (*Aptenodytes patachonica*), and the Johnny or Gentoo (*Pygoscelis papua*). Of these two Mr. Murphy gives a most fascinating account, illustrated by a very large number of photographs taken by himself.

As is well known, the King Penguin incubates its single egg between its thighs and insteps, so to speak, and is able to shift about slowly in spite of the egg in this position. Many of Mr. Murphy's photographs show the birds when thus holding their eggs.

The King Penguin has suffered very severely from sealers, and is now much less common than the Gentoo Penguin, which, however, does not seem to have the fearless and courageous disposition of its Antarctic congener the Adelie, nor is it able to jump and dive so freely.

Mr. Murphy is able to refute a few errors and settle a few uncertainties in his concluding paragraphs regarding these remarkable birds, about which so much has been written of late years.

Robinson and Kloss on Collections of Malayan Birds.

[On a Collection of Birds from the Siamese Province of Bandon, N.E. Malay Peninsula. By H. C. Robinson. J. Fed. Malay States Mus. Kuala Lumpur, v. 1915, pp. 83–110.

The Zoology of Koh Samui and Koh Pennan—Birds. *Id. ibid.* pp. 139–152.

List of a small Collection of Mammals and Birds from the Krau River, Western Pahang. By H. C. Robinson and C. Boden Kloss. *Ibid.* pp. 169–175.

On Two new Species of Birds from the Southern Portion of the Malay Peninsula. *Iid. ibid.* vi. 1915, pp. 29–30.

On the Species of Minivets (*Pericrocotus*) occurring in the Malay Peninsula. By H. C. Robinson. *Ibid.* pp. 31–38.]

As our own pages and those of the 'Journal of the Federated Malay States Museum' show, the activity and industry of Mr. Robinson and his colleague Mr. Boden Kloss show no abatement, and the fauna of the Malay Peninsula must now be one of the best-known of all tropical regions. The first of these papers deals with the avifauna of an obscure district of the Malayan Peninsula, which politically forms part of Siam and through which the new Bangkok–Singapore Railway runs. The fauna of this area is intermediate between that of the southern parts of the Malay Peninsula and Tenasserim, and about eight species are added to the list of Malayan birds.

Koh Samui and Koh Pennan are two islands lying off the coast of Bandon, the province which was dealt with in the preceding paper. Here the main object of the visits of Messrs. Robinson and Kloss was the acquisition of a series of local mammals, but a number of birds were also obtained, though nothing of very great interest, except the little Swift (*Collocalia merguiensis*), which was extraordinarily abundant, and whose nests are regularly collected by the Chinese for eating purposes. This species is new to the Malay Peninsula.

The collection from the Krau River in western Pahang contains nothing of very special interest, except a rare Trogon (*Pyrotrogon orrophæus*) not hitherto represented in any of the local Malayan collections. The object of the expedition was to search for the little-known Argus Pheasant (*Rheinardius ocellatus nigrescens*), but bad weather spoiled the chances of obtaining this rare bird.

The new birds described in the fourth paper are a Flowerpecker, *Piprisoma modestum remotum*, subsp. n., from Negri Sembilan, and *Rhinomyias tardus*, sp. n., also from the same state.

The last paper reviews the Malayan Minivets, among which there has been a good deal of confusion. Four species are recognised and described at length, and one of these is divided into two races. A clear key enables anyone to identify the various forms.

Stevens on the Birds of Assam.

[Notes on the Birds of Upper Assam. By H. Stevens, M.B.O.U. Journ. Bombay Nat. Hist. Soc. xxiii. 1914–5, pp. 234–268, 547–570, 721–736, map and 4 plates.]

This paper contains the results of observations made by Mr. H. Stevens during the last thirteen years in the upper portion of Assam, chiefly in the district of Lakhimpur, where he has long been a resident.

This part of Assam consists chiefly of the alluvial flats on either side of the Brahmapootra and its main affluents, where the great tea-growing industry is carried on, while north and south of the valley there is a heavily forested hill-country, inhabited by wild tribes such as the Mishmis and Abors, very difficult of access, though Mr. Stevens managed during one "cold weather" to make an excursion into these hills along the valley of the Subansiri.

The number of species listed is 464, and each is accompanied by notes on the habits and distribution in Assam.

Mr. Stevens claims that the rules of strict priority have been followed, and trinomials used whenever available, perhaps a rather dangerous proceeding for one who is working so far from the larger museums and libraries; for it is certainly necessary to consult these if the claims of forms to be adjudicated as subspecies or species is to be satisfactorily determined. As, however, he gives references to Oates and Blanford's 'Fauna of British India,' it is easy to identify any species mentioned.

On four plates are reproduced photographs of the typical scenery of the districts treated of, and a good map is given drawn by Mr. Stevens himself, to whom we may well give our congratulations on having completed so useful a bit of work.

Stuart Baker on the Silver Pheasant.

[A Revision of the Genus *Gennæus.* By E. C. Stuart Baker, F.Z.S., F.L.S., M.B.O.U. Journ. Bombay Nat. Hist. Soc. xxiii. 1915, pp. 658–689, 3 pls., 2 maps.]

One of the most difficult and confusing genera of birds at the present time is that containing the Kalij and Silver Pheasants, whose range extends from Kashmir to Formosa and Hainan. It is among the forms of Silver Pheasant found in Burma and the adjoining districts that the greatest amount of variation seems to occur, and it was here that the late Mr. E. W. Oates found material for the recognition of no less than 36 distinct species.

Mr. Stuart-Baker has now gone very carefully through the extensive collections in the British Museum, and in the present paper gives us a very thorough résumé of the results of this examination. He recognises eight species only and an additional eight subspecies, and in addition to keys, synonymy, and description, he relegates the very numerous forms described by Oates, the types of which are all in the British Museum, to their proper places.

The Pheasants of this genus naturally fall into three distinct groups: the true Kalij, in which the prevailing tint on the backs of the males is black; the Burmese Silver Pheasant (*G. lineatus*), in which the back is grey formed by fine vermiculations of white and black; and, finally, the Chinese

Silver Pheasant (*G. nycthemerus*), in which the white greatly preponderates over the black. The Kalij group inhabits areas of dense forest, low elevation and heavy rainfall; the grey birds higher but moderate elevations, mixed forest and grass-lands; the white birds the highest plateaus, chiefly grass-covered, where the rainfall is light or scanty.

It is the interaction of these factors — temperature, humidity, elevation, and vegetable growth—that has brought about the great differentiation of forms in the genus *Gennæus* which we find in Burma; and in this paper, which is illustrated with two maps and three plates, the course of evolution is clearly traced in the introductory portion, which is followed by a thorough systematic revision.

Taverner on the Canadian Cormorant and the Salmon.

[The Double-crested Cormorant (*Phalacrocorax auritus*) and its relation to the Salmon Industries on the Gulf of St. Lawrence. By P. A. Taverner. Canada Dept. Mines, Geol. Surv. Mus. Bull. no. 13, 1915, pp. 1-24.]

Many complaints have recently reached the Geological Survey of Canada, which also concerns itself with questions and investigations of a biological nature, of the depredations of the Cormorant (*Phalacrocorax auritus*) in the salmon-rivers running into the St. Lawrence, along the Gaspé Coast near its mouth. The Director of the Survey accordingly deputed Mr. Taverner, accompanied by Messrs. Young & Hennesey, to investigate this question.

As a result of their enquiries and of the examination of the stomachs of 32 Cormorants, they came to the conclusion that there was little or no foundation for the complaints in regard to the Salmon parr and smolts—the older Salmon would certainly be immune from the attacks of the birds.

The stomachs of the Cormorants examined contained sculpin, herring, and other fish, but in no cases smolt or parr, which are both quick and agile fish and would be unlikely to be caught by fishing birds.

Incidentally some account is given of the numbers and life-history of the Cormorants.

The Austral Avian Record.

[The Austral Avian Record. Vol. ii., Aug. 1913–Aug. 1915.]

The completion of the second volume of Mr. Mathews's journal demands a short notice from us, though, doubtless, it is in the hands of all who are interested in Australian ornithology. In addition to a large number of descriptions of new genera and species, and discussions of some of those already proposed, there are some useful bibliographical notes on Billberg's 'Synopsis Faunæ Scandinaviæ' and on the date of publication of the plates illustrating the ornithology of the voyage of the 'Coquille' between 1822–25, and of Vieillot's 'Galerie des Oiseaux.'

We have already commented on Mr. Mathews's methods in the matter of describing new subspecies, and we fear the later numbers of this journal show very little change for the better. As a rule, no definite type is mentioned, and the descriptions are without measurements, and consist of one short comparative sentence, as, for instance (p. 126), *Mesophoyx intermedia territori* is described as differing from *M. i. plumifera* in its shorter tarsus and bill—no further information is given. As regards genera much the same complaints are necessary. As we have before stated, there may be ample justification for many of these new genera and subspecies, but in very few cases is sufficient evidence given of the grounds on which they are created.

British Birds.

[British Birds: an Illustrated Magazine. Edited by H. F. Witherby, F.Z.S., M.B.O.U. Vol. viii., June 1914–May 1915.]

There are a number of interesting articles in the last volume of 'British Birds,' but the exigencies of space will only allow us to refer to the more important ones. The volume opens with an article on bird-song by Drs. Stadler and Schmidt, who have contributed much to our knowledge of this subject to various German ornithological journals, and who have invented a number of special methods of recording in print "shake," timbre, and rhythm, which have so much importance in bird-music. 'British Birds' has always made a special feature of photographs of birds and their nests, and in the present volume will be found some beautiful reproductions of photographs of the Red-necked Phalarope in the Hebrides by the Misses Best and Haviland, the Avocet in Holland by the first-named, and of Cormorants in Norfolk by Miss Turner; while Miss Haviland, as a result of her travels to the Yenesei, describes and figures the breeding-habits of the Little Stint and Curlew-Sandpiper.

Last year an enquiry was set up in regard to the alleged disappearance of the Land-Rail. A report on this subject by Mr. H. G. Alexander confirms the increasing rarity of this bird, which has practically disappeared from all the southern and eastern counties of England as a breeder. It is difficult to give a satisfactory explanation of this, but Mr. Alexander seems to think that it may be due to the use of corn-cutting machines.

Other reports are offered on the increase or decrease of our "summer residents"—a bad term this latter, summer visitors, in our opinion, being much better. Mr. M. Vaughan is unable to come to any very decided opinions, owing to the scanty answers to the enquiries, but he does state that the Whinchat and Redstart undoubtedly are decreasing.

The bird-ringing report shows that there is no decrease in the enthusiasm with which this enquiry is conducted. Some 13,000 birds were ringed during 1914, and about 3·3 per cent. were recovered. Among the more interesting recoveries is that of a Sandwich Tern, ringed as a nestling on the Farne Islands, July 9, 1913, and recovered on the Ivory Coast of West Africa, Feb. 9, 1914.

Only one new British bird is recorded. Mr. Ford Lindsay writes that two examples of Rüppell's Warbler (*Sylvia rueppelli*) were taken near Hastings on May 6, 1914. This is an eastern palæarctic bird, occurring in Greece and western Asia, and has never before been obtained in the British Islands.

A review—on the whole, kindly—of the new B.O.U. List forms the chief article of the last number of the volume now noticed.

The Emu.

[The Emu. Official Organ of the Royal Australian Ornithologists' Union. Vol. xiv. July 1914-April 1915.]

Our Australian contemporary continues to flourish, and the four numbers forming the last complete volume bear witness to the interest taken in ornithology in the Antipodes. The volume opens with a coloured plate of two new Parrots, recently discovered by the efforts of Dr. Macgillivray in northern Queensland—*Geoffroyus geoffroyi maclennani* and *Eclectus pectoralis macgillivrayi*. No Parrots of either of these genera have previously been obtained on the Australian continent.

The January number contains an account of the Annual Meeting of the R.A.O.U., which took place at Melbourne in November. The retiring President, Mr. A. E. H. Mattingley, gave an address on the much-debated subject of the nomenclature of Australian birds, which between the views of the more conservative party of Australian ornithologists, as represented in the Official R.A.O.U. Check-list, and those of Mr. G. M. Mathews, as expounded in his 'List of the Birds of Australia,' 1913, have been in some considerable confusion of late. Mr Mattingley's conclusions are somewhat non-committal, but he apparently looks forward to the time when strict priority and trinomialism will be adopted by all Australian ornithologists. Mr. Mattingley is succeeded as President of the Union by Capt. S. A. White, and Mr. A. J. Campbell as co-editor of the 'Emu' by Dr. J. A. Leach. The five days' Meeting of the Union concluded with an excursion to Mallacoota Island, where several days were spent and a number of interesting birds were identified, a list of which is given by Capt. White.

An important paper on the myology and other points in the anatomy of *Strepera*, a peculiar Australian type of rather uncertain affinities, occupies the great part of the July number. This investigation was undertaken by Dr. Leech. He comes to the conclusion that *Strepera,* together with *Gymnorhina* and *Cracticus,* should be grouped together in one family, and separated from the Corvidæ as well as the Laniidæ, with which these genera have been hitherto associated.

Of faunal papers with field-notes and photographs, Mr. H. G. Barnard sends a contribution on the birds of Northern Territory, Messrs. Howe and Tregellas on the birds of the Mallee district, on the borders of Victoria and South Australia, while Capt. S. A. White has continued his exploration of the barren regions of central Australia, and has rediscovered the long-lost *Aphelocephala pectoralis* during his exploration of the Musgrave and Everard Ranges. Other papers of a somewhat similar nature are on north Queensland birds by Mr. Le Souëf and by Miss Cheney on the Wangaratta district of Victoria.

Finally, we would like to draw special attention to a short note by Mr. A. J. Campbell, in which he points out the great danger of the total extinction of three species of Parrot—*Psephotus pulcherrimus*, *Euphema pulchella*, and *Geopsittacus occidentalis,* all of which, formerly fairly common, have of recent years become exceedingly rare, if they are not already extinct. Mr. Campbell believes that the disappearance of these birds is due primarily to "the existence of a fierce breed of wild domestic cats," and that steps should be taken to exterminate or reduce these. We hope our Australian brethren may be able to bring this about.

List of other Ornithological Publications received.

BLAAUW, F. E. Ornithologische waarnemingen in het zuiden der Kaapkolonie. (Tijd. Ned. Orn. Vereen., 1915.)

CORY, C. B. Notes on South American Birds, with Descriptions of new Subspecies. (Field Mus. N. H. Publ. 183. Chicago, 1915.)

The Auk. (Vol. xxxii. No. 3. Cambridge, Mass., 1915.)

Austral Avian Record. (Vol. iii. No. 1. London, 1915.)

Avicultural Magazine. (Third Series, Vol. vi. Nos. 9–12. London, 1915.)

Bird Notes. (New Series, Vol. vi. Nos. 7–9. Ashbourne, 1915.)
British Birds. (Vol. ix. Nos. 1–5. London, 1915.)
California Fish and Game. (Vol. i. No. 4. San Francisco, 1915.)
Canada, Geological Survey. Dept. of Mines. Summary Report for 1914. (Ottawa, 1915.)
The Condor. (Vol. xvii. No. 4. Hollywood, Cal., 1915.)
The Emu. (Vol. xv. pt. 1. Melbourne, 1915.)
Field Museum Nat. Hist. Ann. Report of the Director for 1914. (Chicago, 1915.)
The Irish Naturalist. (Vol. xxiv. Nos. 7–9. Dublin, 1915.)
The Scottish Naturalist. (Nos. 43–45. Edinburgh, 1915.)
The South Australian Ornithologist. (Vol. ii. pt. 3. Adelaide, 1915.)
South Australia Dept. Agriculture. Parafield Egg-laying Competition. Final Report. (Adelaide, 1915.)

XLI.—*Letters, Extracts, and Notes.*

To the Editor of 'The Ibis.'

Sir,—In the last 'Ibis' (pp. 637–8) is a letter from Mr. R. Etheridge, Junr., in regard to Messrs. Cockerell and Thorpe; in this he suggests that my remarks regarding these collectors libelled Thorpe, who was personally known to Mr. Etheridge, though of Cockerell Mr. Etheridge does not offer any defence. I am quite willing, at Mr. Etheridge's wish, to absolve Mr. Thorpe from complication in the dishonest practices of which I accused Messrs. Cockerell and Thorpe, and it is then open for some friend of Mr. Cockerell to take up the cudgels on his behalf. The fact is, however, that the collection in question was purchased as made by "Messrs. Cockerell and Thorpe," and under these circumstances I can only allude to this collection under their joint names and am unable to fix the blame for the deception practised. It is quite pleasing to read Mr. Etheridge's defence, and personally I accept his vindication of Mr. Thorpe, but my remarks were only such as were demanded by the facts, which are not altered by Mr. Etheridge's protest. In the collection were many true Cape York species; some of these were labelled Victoria, some West Australia, and some even New Zealand.

Notwithstanding Mr. Etheridge's explanation, I am afraid this scandalous collection will be remembered as the "Cockerell and Thorpe" collection, which seems a pity in view of Mr. Etheridge's assertions.

Yours,
GREGORY M. MATHEWS.

8 Sept. 1915.
Foulis Court,
Fair Oak, Hants.

List of M.B.O.U. serving with H.M. Forces.—The response to the paragraph in the July number of 'The Ibis,' asking Members of the Union now serving in a Naval or Military capacity to send their names to the Editor for publication, has not been very great. There are only 49 names in the present list, though there must be many more Members of the Union serving. It is hoped to publish an additional list in the January number, if Members will send their names to the Editor.

The following is a summary of the present list:—

Serving in the Navy	4
,, France	6
,, Egypt	3
,, India	5
,, British East Africa	2
,, Gallipoli	1
,, the British Islands	22
Killed in action	5
Prisoner in Germany	1
	49

Blackwood, G. G. 2nd Lieut., 10th (Service) Bat. Seaforth Highlanders.

Brabourne, Lord. Lieut. Grenadier Guards, in France. 𝔎 (see 'Ibis,' 1915, p. 617).

Buxton, P. A. Private, 88th Field Ambulance R.A.M.C. in France.

Cheesman, R. E. Private, 5th (Weald of Kent—Territorial) Bat. The Buffs, in India.

***Clarke**, G. van H., D.S.O. Major, City of London Rough Riders, in Egypt.

Cochrane, H. L. Capt. R.N., at first Commdr. H.M.S. 'Yarmouth,' now Asst.-Director Naval Equipment at the Admiralty.

Congreve, W. M. Capt. R.G.A. (Special Reserve), Milford Haven Coast Defences.

Dyer, C. M. 2nd Lieut., 4th Bat. Rifle Brigade, in Flanders. 𝕶 (see 'Ibis,' 1915, p. 618).

***Flower**, S. S. Major, Commanding Camel Transport Corps, Canal Defences, Egypt.

Gladstone, H. S. Capt., 2/5 K.O.S.B. Attached General Staff at War Office.

***Godman**, E. S. Capt., Reserve of Officers, now Staff-Captain No. 8 District, Exeter.

***Grant**, C. H. B. 2nd Lieut., 6th Bat. Rifle Brigade.

Hamerton, A. E. Major, D.S.O., R.A.M.C., with 2nd Cavalry Division in France.

***Harington**, H. H. Lt.-Col., Commanding 84th Punjabis, at Rawalpindi, India.

Hasluck, P. P. H. Private, 2nd Bat. Hon. Artillery Company (Infantry), in England.

Hills, J. W. Capt., 4th Bat. (Extra Reserve) Durham Light Infantry.

***Hony**, G. B. Lieut., 4th Dragoon Guards, in France.

***Horsbrugh**, B. R. Lt.-Col., Commanding 24th Divl. Train, Army Service Corps.

***Ingram**, C. Capt., 2/1 Kent Cyclist Bat.

Kennedy, J. N. Lieut., 130th Heavy Battery, 29th Brigade, R.A.

***Kinnear**, N. B. Lieut. and Adjutant, Bombay Volunteer Rifles, in India.

Legge, Hon. G. Capt. 7th (Service) Bat. S. Staffordshire Regt. 𝕶 at Gallipoli (notice in January 'Ibis').

***Lodge**, G. E. Private, City of London National Guard.

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* Also Member of the British Ornithologists' Club.

__Lynes__, H. Capt. R.N., H.M.S. 'Penelope.'

__Meiklejohn__, K. F. Lieut., 1st Bat. Cameron Highlanders, in France. 𝕶 (see 'Ibis,' 1915, p. 368).

__Meiklejohn__, R. F., D.S.O. Major, 1st Bat. R. Warwickshire Regt. (Wounded, and a prisoner in Germany.)

__Meinertzhagen__, R. Capt., Royal Fusiliers, on the General Staff, Indian Expeditionary Force in British East Africa.

__Moulton__, J. C. Lieut., 4th Bat. (Territorial) Wiltshire Regt., in India.

__Mouritz__, L. B. Trooper, Australian Light Horse, at the Dardanelles (reported missing, Aug. 12).

*__Munn__, P. W. Lieut., 13th Bat. Hampshire Regt.

*__Murray__, E. M. Capt., Scottish Horse.

__Murray__, H. W. Capt., Scottish Horse.

*__Ogilvie-Grant__, W. R. Private, 1st Bat. Central London Regt., in England.

__Pitman__, C. R. S. Lieut., 27th Punjabi Regt., in Egypt.

*__Price__, A. E. Lieut., Welsh Guards.

*__Proctor__, F. W. Major, Recruiting Officer, Northern Command.

__Robinson__, H. W. 2nd Lieut., late 2/4 Bat. King's Own Royal Lancaster Regt.

*__Selous__, F. C. Lieut. 25th Bat. Royal Fusiliers (Frontiersmen), in British East Africa.

*__Sparrow__, R. Lt.-Col. 7th Dragoon Guards, in France.

__Stanford__, H. M. 2nd Lieut., Royal Artillery.

__Stanford__, J. K. 2nd Lieut., 10th (Service) Battalion Suffolk Regt.

__Thomson__, A. Landsborough. 2nd Lieut. 13th (Service Bat.) Argyll & Sutherland Highlanders (attached 4th Extra Res. Bat.).

*__Treatt__, C. C. 2nd Lieut. 1st Bat. Loyal N. Lancashire Regt., attached No. 1 Squadron R. Flying Corps, in France.

*Vaughan, R. E. Commander R.N.; R. Naval Barracks, Chatham.

Venning, F. E. W. Capt., 31st Punjabis, in Baluchistan.

*Wardlaw-Ramsay, R. G. Col. Commanding No. 3 Section Forth Defences.

*Wollaston, A. F. R. Surgeon, H.M.S. 'Agincourt.'

Woosnam, R. B. Lieut., Worcester Regt., at the Dardanelles. 𝕶 (see 'Ibis,' 1915, p. 781.)

*Wynne, R. O. Lieut., 2nd Bat. Bedfordshire Regt., in France.

Discovery in New Zealand.—Mr. Louis T. Griffin, of the Auckland Museum, New Zealand, sends us the following extract from the 'Auckland Herald' of June 21 last:—

"A remarkable discovery of bird-life has been made by Mr. R. E. Clouston, mining engineer, of Rockville, in Collingwood, Nelson district. Mr. Clouston knows a great deal about bird-life in New Zealand, and, while exploring the Gouland Downs—a block of Crown land, some 26 miles from Rockville,—he discovered an entire colony of birds of rare species.

"First, there was a rookery of Great Kiwi (*Apteryx haasti*)—not a few stray families, but thousands of them—grubbing about in patches of tussock land, which alternated with clumps of virgin bush. There were not only Kiwis, but thousands of Kakapos, which are so rare that an advertisement appeared in an Auckland paper a few months ago offering £8 for a pair of them. Mr. Clouston arrived here with twenty-five of the big Kiwis.

"'I've been a bird man all my life,' said Mr. Clouston, 'and have travelled all over New Zealand, and have never seen anything like it. It is a really wonderful discovery from a scientific point of view, and it will mean the preservation of the various species. The birds I have with me are to be liberated on Little Barrier Island, which, of course, is a sanctuary. Not only are there Kiwis and Kakapos on the block, but there are Blue Mountain Duck by the dozen, Saddlebacks (worth £10 each), New Zealand Robins, Wrens, Owls, Cook's Petrels (rain bird), Keas, Kakas, Tui, Makomakos, Warblers, Riflemen, Creepers (very rare), Maori Hens, Fantails, Tomtits, and Pigeons. It was a harvest of rarities. Kiwis are there because the feed is good. We found great worms from 4 to 5 feet in length. The longest one I measured was 4 feet 10 inches long. As soon as I found them, I communicated with Sir Francis Bell and asked him to have the block declared a sanctuary, and that has been done. It was gazetted some days ago.' "

Mr. Griffin writes further as follows in regard to this discovery:—"This district is so far removed from Auckland that I lament I am not able to go and see for myself such a number of our rare native birds. We have every reason to believe that the facts, as here stated, are quite true, and some of the Kiwis arrived in Auckland last week, *en route* for the Little Barrier Island, which is situated at the entrance to the Hauraki Gulf.

"Sir Francis Bell's brother is my next-door neighbour, and he also considers the statement not at all improbable, as the district is one that is very little known to either white man or natives.

"Some New Zealand birds are getting very rare, owing to the burning of the bush for one reason, and stoats, weasels, rats, and cats are responsible for the destruction of many. On the mainland of the Auckland district there are, however, still plenty of *Apteryx mantelli*, *Hemiphaga novæ-zealandiæ*, *Ninox novæ-zealandiæ*, *Nestor*, *Cyanorhamphus*, *Halcyon vagans* (one of our very commonest birds), *Urodynamis*, *Chalcococcyx*, *Acanthidositta*, *Pseudogerygone*, *Rhipidura*, *Bowdleria*, *Prosthemadera*, *Zosterops*, *Glaucopis*, and *Anthornis*, not counting the Waders and Sea-birds, which, with one or two exceptions, are very plentiful. Last October, in the ranges at the back of Auckland, I saw many Kiwis in one day, and I know where there are a fine lot of the beautiful *Anthornis melanura* within an hour of Auckland City, but they are all on an island. I do not believe there is one of this species on the mainland throughout the Auckland provincial district."

Honour for a M.B.O.U.—At the University of Leeds, on Degree Day, July 3rd, the Duke of Devonshire, as Chancellor, conferred the degree of Master of Science, *honoris causa*, upon Mr. Thos. H. Nelson, M.B.O.U., J.P. of Seafield, Redcar, in recognition of his labours in connection with Yorkshire natural history, and especially his work on the 'Birds of Yorkshire.'

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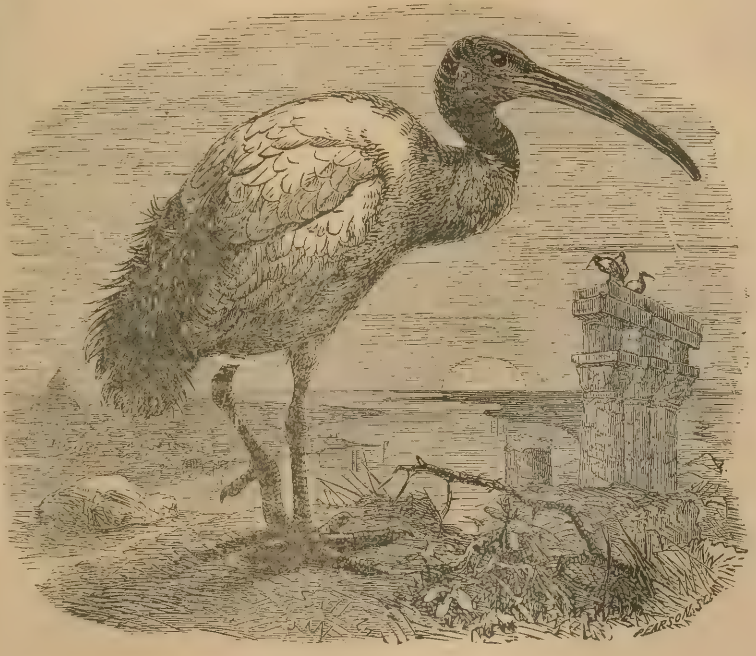

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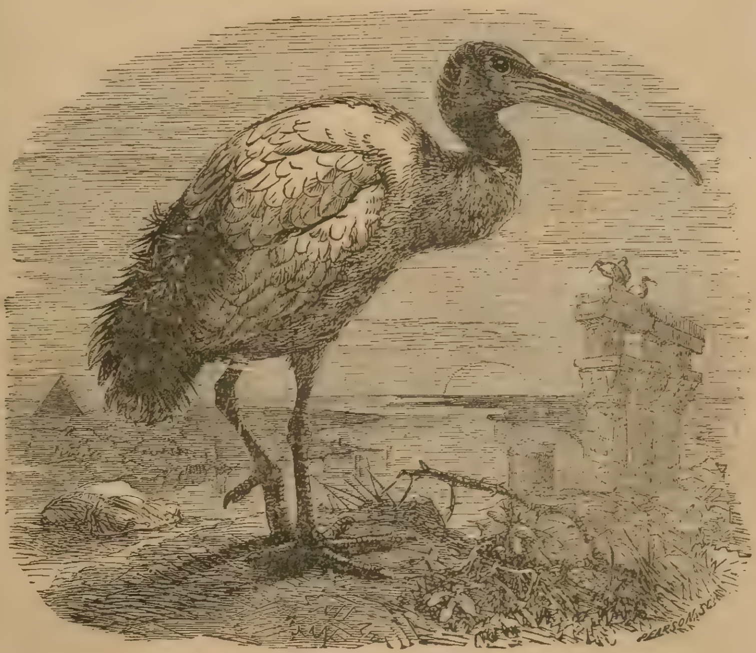

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